EIA Registration Document

Residential Development, Magnetic Hill Estates Subdivision
Moncton, New Brunswick

Prepared for:

RobAly Homes Inc.
46 Diamond Head Court, Unit 113
Moncton, New Brunswick
E1G 5S3

Project: 21.03.162
December 1, 2021

hive ENGINEERING

Hive Engineering Limited
29 Victoria Street, Unit 102
Moncton, NB, E1C 9J6
506.386.4897
www.hiveeng.ca

December 1, 2021
Project: 21.03.162

RobAly Homes Inc.
46 Diamond Head Court, Unit 113
Moncton, New Brunswick
E1G 5S3

Attention: Robert LeBlanc

Re: EIA Registration Document, Residential Development
Magnetic Hill Estates Subdivision, Moncton, New Brunswick

Hive Engineering Limited has prepared the following EIA Registration Document for the proposed residential development in the Magnetic Hill Estates Subdivision in Moncton, New Brunswick. Our conclusions and recommendations are presented in the following report.

Do not hesitate to contact the undersigned with any questions regarding the information presented herein.

Sincerely,

Andrea Kalafut, M.Sc.E., P.Eng.
President and Senior Environmental Engineer
Hive Engineering Limited

Professional Review

The field work, report preparation and engineering review of this document was overseen by Ms. Andrea Kalafut, M.Sc.E., P.Eng., a recognized Environmental Site Professional and Professional Engineer licensed to practice in New Brunswick. It is the intent that this report be read in its entirety for a full understanding of environmental risk and liabilities.

The work was completed per engineering standards and guidelines in place in 2021. If significant time lapses prior to the undertaking of additional work, the findings of this report should be reviewed by the engineer to ensure the recommendations and conclusions comply with current environmental guidelines.

Information regarding the property and history of the Site are critical for identifying environmental liabilities. If any discrepancies, inaccuracies, or data gaps are identified in the report, we request the opportunity to review them with the client.

Hive Engineering Quality System	
Project No. 21.03.162	Date: December 1, 2021
Prepared By: Katie Gillis, P.Eng.	
Reviewed By: Andrea Kalafut, M.Sc.E., P.Eng.	
	

Glossary of Terms

Abbreviation	Definition
ACCDC	Atlantic Canada Conservation Data Centre
BMP(s)	Best Management Practice(s)
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ECCC	Environment Climate Change Canada
EIA	Environmental Impact Assessment
NBDERD	(New Brunswick) Department of Energy and Resource Development
NBDELG	New Brunswick Department of Environment and Local Government
NB ESA	New Brunswick Endangered Species Act
PID(s)	Parcel Identifier(s)
SARA	Species at Risk Act
SNB	Service New Brunswick
SOCC	Species of Conservation Concern
TRC	Technical Review Committee
WAWA	Watercourse and Wetland Alteration

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

INTRODUCTION

Hive Engineering Limited (herein "Hive") was retained by RobAly Homes Inc. (herein "Proponent") to prepare an Environmental Impact Assessment (EIA) registration document for the expansion of a residential subdivision within the existing Magnetic Hill Estates Subdivision in Moncton, New Brunswick. The residential subdivision is proposed to be constructed on the two properties identified by Service New Brunswick (SNB) as Parcel Identifiers (PIDs) 00939744 and 70183181.

This registration document is required under the New Brunswick *Environmental Impact Assessment Regulation 87-83* of the *Clean Environment Act*. As per Item (v) of Schedule "A" of *"A Guide to Environmental Impact Assessment in New Brunswick"*, the project will impact a wetland that is greater than two hectares in area.

1.0 THE PROPONENT

The Proponent details for this registration document are as follows:

Table 1 Proponent Information

Name of Undertaking:	Expansion to Magnetic Hill Estates Subdivision (2022), Moncton, NB
Name of Proponent:	RobAly Homes Inc.
Address of Proponent:	46 Diamond Head Court, Unit 113, Moncton, NB E1G 5S3
Principal Proponent Contact:	Contact: Mr. Robert LeBlanc Phone: 506.854.5320 Email: cvrhomes@rogers.com
Principal Contact for EIA:	Company: Hive Engineering Limited Contact: Ms. Andrea Kalafut, M.Sc.E., P.Eng., President and CEO Address: 29 Victoria Street, Unit 102, Moncton, NB, E1C 0T3 Cell Phone: 506.232.1306 Email: andrea.kalafut@hiveeng.ca
Property Ownership:	RobAly Homes Inc.

2.0 PROJECT DESCRIPTION

2.1 Project Name

Expansion to Magnetic Hill Estates Subdivision (2022), Moncton, NB

2.2 Project Overview

The Project is the expansion to an existing residential subdivision in the north end of Moncton, New Brunswick and will include the construction of a public street and cul-de-sac (including municipal infrastructure) and 50 lots of semi-detached (two-unit) residential dwellings. The residential dwellings will be serviced with municipal water and sanitary sewer; storm drain infrastructure will also be present in roadways constructed as part of the subdivision. A storm water detention plan has also been developed to manage surface water drainage on the Site. The preliminary subdivision plan (WSP's *"Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of Promenade Satara Drive, City of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick"* dated December 11, 2020) is presented in Appendix A.

The Project will take place on PIDs 00939744 and 70183181 (herein referred to as the "Site"). The Site is 5.96 hectares of vegetated and partially infilled land. The development will include the infilling of approximately 0.7 hectares of wetland on PID 00939744; however, the total area of the wetland is over 2 hectares (total delineated area of 3.7 hectares; 0.7 hectares on-site and 3.0 hectares off-site).

2.3 Purpose/Rationale/Need for Undertaking

The Site is situated within an existing subdivision in the north end of Moncton. Moncton is currently experiencing an unprecedented housing shortage. The development will provide new housing options for families and individuals within the City of Moncton, and within an existing subdivision that contains similar residential units and access to local amenities. The Site is located within walking distance to several elementary and middle schools, which will contribute to residents' health and wellness, and will also promote less vehicle traffic within the newly developed area.

According to the Proponent, each of the residential units (100 total) will be sold for a minimum of approximately $259,900; the property assessment for each of the properties proposed as part of the subdivision will yield approximately $2,030 per year, resulting in a minimum of $203,000

in annual property tax revenue for the City of Moncton once the residential dwellings are constructed and occupied.

Municipal services including water, storm and sanitary sewer are present in nearby right-of-ways (August Terrace and Satara Drive). The Project will utilize these existing services to provide water and sewer services to the residential dwellings proposed as part of the Project.

The Project will include the construction of Belfry Street, which will begin at the current intersection of Augusta Terrace and Crowbush Crescent (northeast of the Site) and connect to Satara Drive (southwest of the Site). A cul-de-sac will also be constructed off the northern portion of Belfry Street extending west to service residential lots on the northern half of the Project.

According to as-builts provided by the Client and presented in Appendix B (J.R. Daigle Engineering Ltd.'s *"Magnetic Hill Estates Subdivision, Unit No. 8 Roadways, Water & Sewer Services As Built"* dated July 2005 and WSP's *"Record Drawing Plan and Profile, Satara Drive, Liberty Hill Estates, Unit 5, Phase 2, Moncton, New Brunswick"* dated January 2019), municipal services (i.e., 150 mm water main, 200 mm sanitary sewer and 600 mm storm sewer lines) have been constructed and capped in place at the northern termination point of Belfry Street. Municipal water and sanitary sewer lines (both 200 mm diameter) have also been capped in place near the intersection of Satara Drive and Ryan Street, immediately southwest of the Site. These streets will serve as the two connection points from the Project to existing residential development surrounding the Site. Typically, domestic water connections are safest when looped through streets to allow water to flow rather than to be stagnant at dead-end pressure zones; therefore, the extension of municipal water services along the length of the new street constructed as part of the Project will remove the current dead end for the water mains at the northern termination point of Belfry Street and Satara Drive, maximizing the functionality of municipal water services within the development.

The Project will provide much needed housing within the municipal boundary of the City of Moncton. There is a shortage of land within the municipal boundary. Coupled with the fact that the city is experiencing a housing shortage, if the development is not constructed, it will likely result in further urban sprawl. Urban sprawl will contribute to the development of unurbanized, natural areas and also likely contribute to increased carbon emissions associated with normal everyday travel in and out of the City of Moncton.

Alternatives for the Project would include the expansion of residential development outside of city limits; however, this would force the construction of subdivisions in rural areas and would

not fulfill the need for housing within the municipal boundary, and within walking distance to schools. The City of Moncton has identified the need to in-fill serviceable land with housing options prior to developing land for residential use outside of the municipal boundaries. Therefore, the development of the Project in this specific area is justified in fulfilling the current needs associated with the housing crisis in the City of Moncton.

2.4 Project Location

The Site is approximately 5.96 hectares of vegetated land (PIDs 00939744 and 70183181), situated within an existing subdivision in the north end of Moncton. The approximate coordinate for the centre of the Site is Lat: 46° 7’ 20” N and Long: 64° 52’ 53” W. The Site PIDs do not have civic addresses; however, SNB indicates that PID 00939744 is located on Belfry Street and PID 70183181 is located on Augusta Terrace, both in the City of Moncton in Westmorland County. Figure 1 shows the location of the Site within the existing north end residential development (GeoNB 2020 Aerial Photography).

Figure 1 – Project Location (GeoNB mapping, 2020 aerial photography).

The Site is generally bound by roadways and associated residential dwellings. Single-family residential dwellings are present immediately north and west of the Site, with municipal roadways beyond (Augusta Terrace and Ryan Street to the north and west, respectively). A walking trail and Muirfield Drive are present immediately east of the Site. The adjoining properties to the south consist of wetland and Satara Drive.

2.5 Siting Considerations

In 2018, RobAly Homes Inc. acquired the Site (PIDs 00939744 and 70183181), which is situated within the Magnetic Hill Estates subdivision. The residential development has been expanding at a consistent rate over the last 20 years in response to local housing demand.

Municipal sanitary, storm and water services are readily available in the area on existing right-of-ways to the north, east, west and south of the Site. According to as-builts provided by the City of Moncton (presented in Appendix B), municipal services were capped in place at the northern termination point of Belfry Street (immediately northeast of the Site) to facilitate the future residential development of the Site. Electricity for adjoining residential properties is currently provided by overhead services managed by NB Power. The area is situated on a local bus route to provide transportation options for future residents of the subdivision. The properties are also situated within 150 meters of Northrup Frye School and 750 meters of Maplehurst Middle School, which will allow residents to use alternative modes of transportation (i.e., walking, biking, skateboarding, etc.).

The Site consists of one of the last remaining areas that has not yet been developed as part of the existing subdivision in this area of Moncton. The consequence of not developing this Site for residential use will be perpetuating the demand for housing within the City of Moncton. Other options for providing new housing include the expansion of residential development outside of city limits, forcing the construction of subdivisions in rural areas. The City of Moncton has identified the need to in-fill serviceable land with housing options prior to developing land for residential use outside of the municipal boundaries.

According to the Proponent, previous owners of the Site historically utilized the Site as a construction yard during the development of residences in the surrounding areas.

According to the City of Moncton Zoning Map (amended October 25, 2021), the Site and adjoining properties to the north and east are zoned ‘R2’ for two unit dwelling zone. The adjoining properties to the south and east are zoned ‘P-1’ for community use zone.

GeoNB mapping indicates that a provincially regulated wetland is present on the eastern portion of the Site (PID 00939744) and adjoining property to the south (PID 70629431); a delineation confirmed that the wetland is approximately 3.7 hectares in area.

To address specific requirements outlined by NBDELG in the Siting Considerations, we offer the following:

- It is unlikely that archeological resources are present on-site; the potential archaeological resources are discussed in further detail in Section 3.2.2 of this report.
- It is understood that a WAWA permit will be required if the Project is approved.
- The Project is not located within Zone A or B as prescribed in *"A Coastal Areas Protection Policy for New Brunswick"*.
- The Site is currently zoned by the Greater Moncton Planning commission for the future intended use (i.e., residential).

2.6 Physical Components and Dimensions of Project

A plan showing the location of the Site is presented in Appendix C. The Site occupies a total area of 5.96 hectares. The dimensions of the Site (at its largest width (west to east) and length (north to south)) are approximately 370 meters by 200 meters. There are no conceptual drawings of the semi-detached residential dwellings proposed for construction at the Site.

The Project will involve the development of the entire area of the Site (5.96 hectares), including the construction of public roadways that will later be owned and operated by the City of Moncton. The construction of the roadways will include the installation of municipal storm, sanitary sewer and water lines. The Project also includes the construction of storm water detention ponds to facilitate surface water management. The ponds will be constructed in accordance with municipal requirements. Additional details regarding the proposed development are presented in a site plan (WSP's "New Residential Development, Street Layout and Servicing Schematic" dated February 4, 2021) in Appendix D.

To address specific requirements outlined by NBDELG in the Physical Components and Dimensions of the Project in the Guide, we offer the following:

- The Project will include the construction of permanent roads and associated water and sewer infrastructure that will ultimately be maintained and owned by the City of Moncton;
- The Project will include the construction of 50, two-unit, semi-detached residential dwellings, which will be privately owned and managed.
- The length of the proposed Belfry Street, connecting to August Terrace (northeast of the Site) and Satara Drive (south of the Site) will be approximately 450 metres. The length of

the cul-de-sac to be constructed on the northern portion of the Site is approximately 200 metres.

- The approximate area of impervious surfaces in the Project area (including the streets, footprints of residential dwellings and driveways) will be approximately 35,000 square metres (3.5 hectares).
- Any external lighting required for the project will comply with the City of Moncton's requirements. It is anticipated that some roadway lighting will be required.
- The Project will adhere to any setbacks proposed by the municipality or utility service provider (i.e., NB Power). The work will encroach within a wetland and within the 30-metre wetland buffer. The Proponent does not have any intention of constructing permanent fencing; fencing will be at the discretion of the individual homeowners once the development is complete.
- Construction traffic (i.e., dump trucks, concrete trucks, delivery trucks hauling materials such as lumber, PVC piping, etc.) will increase over the short-term in order to accommodate the construction of the Project. Temporary lay down areas should be limited to the Site.

2.7 Construction Details

The Proponent intends to construct the subdivision in two separate Phases which are detailed in the following sections. The construction activities during both phases of construction will generally take place between 7am and 7pm, Monday to Friday.

2.7.1 Phase 1 Infrastructure Construction (Sub-grade Construction)

Phase 1 will begin with clearing and grubbing and the construction of a new street (Belfry Street) and associated infrastructure. Belfry Street will connect Augusta Terrace (northeast corner of the Site) to Satara Drive (located at the southwest corner of the Site). A cul-de-sac will also be constructed from the north end of Belfry Street extending west.

The Proponent has scheduled the first phase of the Project to begin in April of 2022; it is estimated that the work for Phase 1 will take approximately 10 weeks to complete. The first phase consists primarily of below grade work and will include the following steps:

1. Clearing and grubbing of the entire Site; this will take place prior to mid-April prior to the start of the regional nesting period for nesting/breeding birds. Following clearing and grubbing, silt fencing will be installed along the perimeter of the Site for erosion/sediment control over the duration of the Project.

2. Earthwork for the shaping of storm water detention ponds and installation of storm water infrastructure. Overburden soil removed from the storm water detention pond locations will be re-used during Site grading.

3. Installation of municipal infrastructure (i.e., sanitary sewer, storm drain and water services) will be completed, beginning with the installation of the deepest pipe by elevation. Each residential lot will be serviced with a single storm lateral for footing drains, two sanitary laterals and two water service laterals, one for each unit of the two-unit dwellings.

4. Once municipal infrastructure is installed, the excavations will be backfilled in accordance with engineering recommendations. The street and cul-de-sac will be backfilled to subgrade elevation and the curb drains will be installed and connected to catch basins in the right-of-way.

5. During Phase 1, the drainage swales along the rear of the residential lots will also be constructed.

Phase I of the Project will be overseen by civil and geotechnical engineering firms in accordance with the City of Moncton requirements.

2.7.2 Phase 2 Infrastructure Construction (Above-grade Construction)

The Proponent has scheduled the second phase to being in July of 2022 and will consist of the following:

1. Begin construction of the curb for the street (Belfry Street) on-site.

2. Surfacing of the street and sidewalk; this will be done under the supervision of qualified quality control personnel. This portion of the construction should be completed in three weeks.

3. Following the surfacing of the roadway and sidewalk, testing and inspection reports will be completed and submitted to the City of Moncton for approval.

An earthwork contracting company owned and operated by the Proponent will be responsible for completing the majority of the below grade construction (i.e., installation of municipal infrastructure and site preparation). During these construction activities, the crew will generally consist of five to seven employees. Equipment used on-site during the earthwork operations will

consist of dump trucks, excavators, bulldozers and rollers used to excavate, backfill and compact material.

During the construction and finishing of the street, crews will generally consist of six to eight employees for constructing the curb, three to four employees for constructing the sidewalk and six to eight employees for surfacing the street with asphalt. Equipment used during this phase of the construction will consist of dump trucks, curb machines, pavers, asphalt rollers and concrete mixers.

The proposed schedule for the Project is as follows:

- Phase I Infrastructure Construction – April 1, 2022 through mid to end of June 2022.
- Phase 2 Infrastructure Construction – July 2022 through the end of July / beginning of August 2022.
- Construction of Semi-Detached Dwellings and Associated Landscaping – July of 2022 until 2026 (estimate), depending on market demand.

The cleared vegetation and grubbings removed during Phase I will be taken off-site for disposal at a local pit. Any fill materials (i.e., crushed rock) will be clean and sourced from a local pit (likely from the Gorge Road). Although the Project will result in an increase in traffic in the area, no detours will be necessary to accommodate the work. The majority of the work will be limited to the Site until the project is complete.

Potential pollutants that could be generated during the construction phase include:

- Noise associated with the operation of machinery, vehicles and equipment.
- Airborne emissions (volatile organics) associated with the operation of machinery, vehicles and equipment.
- Dust associated with exposed soils and/or wind.
- Sediment in runoff during construction.
- Minor releases of hydraulic/diesel spills from equipment, vehicles and machinery operating on-site.
- Solid waste generated as part of general construction activities (i.e., excess PVC piping, concrete, asphalt, cardboard, plastics etc.).

The mitigation measures employed to reduce impacts to the environment are discussed in further detail in Section 5.0 of this report.

It is anticipated that during the earthwork operation and first phase of the Project, the Site will be accessed through Belfry Street.

Following the completion of the below grade construction and finishing of the roadway, sidewalks and storm water detention ponds, the final step of construction consists of the individual development of the residential lots. The Proponent has indicated that the construction of the residential dwellings will be completed by Moemar Homes or CVR Homes, both companies that are owned and operated by the Proponent. Depending on the market, the 50 dwellings will be built over a period of 4-5 years beginning in July 2022.

2.8 Operation and Maintenance Details

Upon the completion of the construction of the infrastructure for the subdivision, each of the residential dwellings will be sold and privately owned. Therefore, the operation and maintenance that will occur post-construction will be the responsibility of the owner of the individual residences.

Potable water and sanitary sewer services will be provided by the City of Moncton. The water and sewer system has been designed by a civil engineer licensed to practice in the Province of New Brunswick. Typical domestic waste generated in the individual residences will be collected curb-side by municipal waste management services on a weekly basis.

2.9 Future Modifications, Extensions or Abandonment

The Project will consist of the construction of 50, two-unit dwellings within an existing subdivision. Future modifications, extensions or abandonment are not expected. With the exception of the adjoining property to the south (consisting predominantly of approximately three hectares of wetland), areas immediately surrounding the Site are developed for residential or community use (i.e., are occupied by residential dwellings, roadways and a walking trail). Based on the location of the Site and current adjoining land use options for future modifications or expansions are limited.

2.10 Documents Related to the Undertaking

Documents relevant to the Project have been presented in Appendices A through H, including the following:

- WSP's *"Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of*

Promenade Satara Drive, Cit y of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick" dated December 11, 2020 (presented in Appendix A).

- J.R. Daigle Engineering Ltd.'s *"Magnetic Hill Estates Subdivision, Unit No. 8 Roadways, Water & Sewer Services As-Built"* dated July 2005 (presented in Appendix B).
- WSP's *"Record Drawing Plan and Profile, Satara Drive, Liberty Hill Estates, Unit 5, Phase 2, Moncton, New Brunswick"* dated January 2019 (presented in Appendix B).
- Hive Engineering (obtained through GeoNB Mapping) *"21.03.162 – Site Plan"* dated November 30, 2021 (presented in Appendix C).
- WSP's *"New Residential Development, Street Layout and Servicing Schematic"* dated February 4, 2021 (presented in Appendix D).
- WSP's Topographic Map of Site, *"Job: 201-08268"* (presented in Appendix E).
- Atlas of Canada's Toporama Map, obtained by Hive Engineering on November 30, 2021 (presented in Appendix E).
- Atlantic Canada Conservation Data Centre *"Data Report 6980: Moncton, NB"* prepared Juned 22, 2021 (presented in Appendix F).
- Overdale Environmental Inc.'s *"Standard Wetland Delineation, Belfry Street, Moncton, NB, PID 00939744"* dated June 16, 2020 (presented in Appendix F).
- Overdale Environmental Inc.'s *"Wetland Delineation Report, Satara Drive, Moncton, NB"* dated July 12, 2021 (presented in Appendix F).
- Aster Group Environmental Services Co-op's *"CV Homes Bird Survey"* dated June 21, 2021 (presented in Appendix G).
- New Brunswick Department of Heritage, Tourism and Culture (Heritage and Archaeological Services Branch), Archaeology Map of Site, obtained by Hive engineering on November 26, 2021 (presented in Appendix H).

No other applications to municipal, provincial or federal agencies have been submitted concurrently with this EIA registration with the exception of a building permit submitted to the City of Moncton.

3.0 DESCRIPTION OF EXISTING ENVIRONMENT

3.1 Physical and Natural Features

3.1.1 Topography

A topographic plan for the Site, as well as a topographic map provided by the Atlas of Canada is presented in Appendix E. In general, the Site and surrounding area slope east/southeast toward

the West Branch of Halls Creek and associated tributaries; the nearest tributary is located approximately 480 meters northeast of the Site (at its nearest point).

Locally, the area surrounding the Site has been developed for residential purposes; these areas have been locally graded to drain toward municipal storm water infrastructure in nearby roadways. The Site is vegetated and contains low-lying areas within an existing wetland on the southeast portion of the Site.

3.1.2 Watercourses

There are no watercourses present on the Site or immediate adjoining properties.

3.1.3 Coastal Features

The Site is located in the City of Moncton. There are no beaches, dunes, rock platforms, coastal marshes or diked lands on the Site or within 30 metres of the Site. There are no features in the area protected under *A Coastal Protection Policy for New Brunswick*.

3.1.3.1 General Geology

Surficial geological mapping indicates that the area is covered with blankets (0.5 to 3.0 meters thick) of Late Wisconsinan age morainal sediments that consist of loamy lodgement till, minor ablation till, silt, sand, gravel and rubble.

Bedrock geological mapping indicates that the bedrock in the area consists of Late Carboniferous-aged sedimentary bedrock.

3.1.4 Groundwater

The Site is located within an existing subdivision that is serviced with the City of Moncton municipal water services. Water for the City of Moncton is provided by the Turtle Creek reservoir, which is located more than 13 kilometres due south of the Site. The Site is not located within any protected wellfield areas, and groundwater in immediate proximity to the Site is not used as a potable drinking water supply. Given the fact that there are no communal or municipal groundwater wells in proximity to the Site, it is reasonable to assume that the Project will have no impact on the potable groundwater resources in the area.

3.1.5 Protected Wellfields/Watersheds

According to NBDELG records, the Site is not located within a watershed or wellfield protected area.

3.1.6 Ambient Air Quality

The Site is situated within an existing residential subdivision. Air quality is consistent with conditions expected to be present within a suburban residential area. There is currently no significant generation of dust or other emissions in the area surrounding the Project location.

3.1.7 Existing Ambient Noise Levels

The Site is situated within an existing residential subdivision. Ambient noise levels are consistent with conditions expected to be present within a suburban residential area (i.e., minor traffic noise, children playing, lawnmowers, snowblowers, etc.).

3.1.8 Fish Habitat

There are no open surface water bodies on-site or any immediate adjoining properties. There is no fish habitat on-site and the proposed project is not anticipated to impact fish or fish habitat.

3.1.9 Rare Flora and Fauna

Information from the ACCDC was obtained to provide desktop data of potentially rare species that may be present within five kilometres of the Site. The ACCDC data is presented in Appendix F.

The following table provides a list of rare flora and fauna that have been identified in the database and their current status and rarity rank:

Table 2 Summary of ACCDC Data

Species	COSEWIC	SARA	Provincial Legal Protection	Provincial Rarity Rank
FLORA				
Black Ash *(Fraxinus nigra)*	Threatened	-	-	S4 S5
FAUNA				
Atlantic Salmon – Inner Bay of Fundy pop. *(Salmo saler pop.1)*	Endangered	Endangered	Endangered	S2
Loggerhead Shrike *(Lanius ludovicianus)*	Endangered	Endangered	-	SXB, SXM
Eastern meadowlark *(Stumella magna)*	Threatened	Threatened	Threatened	S1B, S1M
Least Bittern *(Ixobrychus exilis)*	Threatened	Threatened	Threatened	S1S2B, S1S2M

Species	COSEWIC	SARA	Provincial Legal Protection	Provincial Rarity Rank
Wood Thrush *(Hylocichla mustelina)*	Threatened	Threatened	Threatened	S1S2B, S1S2M
Eastern Whip-Poor-Will *(Anrostomus vociferus)*	Threatened	Threatened	Threatened	S2B, S2M
Barn Swallow *(Hirundo rustica)*	Threatened	Threatened	Threatened	S2B, S2M
Bank Swallow *(Riparia riparia)*	Threatened	Threatened	-	S2S3B, S2S3M
Bobolink *(Dolichonyx oryzivorus)*	Threatened	Threatened	Threatened	S3B, S3M
American Eel *(Anguilla rostrata)*	Threatened	-	Threatened	S4
Barrows Goldeneye – Eastern pop. *(Bucephala islandica – Eastern pop.)*	Special Concern	Special Concern	Special Concern	S2M, S2N
Rusty Blackbird *(Euphagus carolinus)*	Special Concern	Special Concern	Special Concern	S3B, S3M
Olive-sided Flycatcher *(Contopus cooperi)*	Special Concern	Threatened	Threatened	S3B, S3M
Canada Warbler *(Cardllina canadensis)*	Special Concern	Threatened	Threatened	S3B, S3M
Common Nighthawk *(Chordeiles minor)*	Special Concern	Threatened	Threatened	S3B, S3M
Eastern Wood-Pewee *(Contopus virens)*	Special Concern	Special Concern	Special Concern	S4B S4M
Monarch *(Danaus plexippus)*	Endangered	Special Concern	Special Concern	S3B, S3M
Transverse Lay Beetle *(Coccinella transversoguttata richardsoni)*	Special Concern	-	-	SH
Wood Turtle *(Glyptemys insculpta)*	N/A	Threatened	Threatened	N/A
Bat hibernaculum or bat species occurrence[1]	N/A	Endangered	Endangered	N/A

Notes: [1.] Myotis lucifugus (Little Brown Myotis), Myotis septentrionalis (Long-eared Mytois) and Perimyotis subflavus (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under Federal Species at Risk Act and the NB Species at Risk Act

Following a review of the desktop data, field studies were completed at the Site including wetland delineations and review of existing vegetation, and a bird survey. The details of the field studies are presented in the following sections.

3.1.10 Wetlands and Existing Vegetation

A wetland is present on a portion of the Site (PID 00939744) and extends onto the adjoining property to the south (PID 70629431); A wetland delineation was completed to determine the actual extents of the wetland on the Site.

A wetland delineation was completed on PID 00939744 (eastern portion of the Site) in June of 2020; the report has been provided under separate cover and is included in Appendix G (Overdale Environmental Inc.'s *"Standard Wetland Delineation, Belfry Street, Moncton, NB, PID 00939744"* dated June 16, 2020). The report indicates that the wetland delineation was conducted by Theo Popma, M.Sc., in accordance with the NB Wetland Conservation Policy and the Clean Environment Act. The field survey indicated that the Site has been impacted by the residential development that has occurred on surrounding properties; a portion of the wetland observed on-site has been cleared and partially in-filled. Vegetation in the area generally consists of mixed hardwood and softwood trees and shrubs (including Wild Raisin *(Viburnum nudum)*, Sheep Laurel *(Kalmia Angustifolia)* and Bunchberry *(Cornus canadensis)*) in dry forested areas, and shrub swamps/marshy conditions within the footprint of the wetland; vegetation within the wetland generally consists of Soft Rush *(Juncus effusus),* Silvery Sedge (*Carex cannescens),* and Canada Bluejoint *(Calamagrostis canadensis)*. The report indicates that approximately 0.7 hectares of wetland habitat are present on the southern portion of the Site; the wetland habitat reportedly consists of approximately 0.5 hectares of shrub swamp and 0.2 hectares of marsh.

A second wetland delineation was completed by Overdale Environmental Inc. to confirm the overall size of the wetland (i.e., size of the wetland on the adjoining property to the south that is connected to the wetland previously delineated on-site in 2020). The report has been provided under separate cover and is included in Appendix G (Overdale Environmental Inc.'s *"Wetland Delineation Report, Satara Drive, Moncton, NB"* dated July 12, 2021). The field survey was conducted by Theo Popma, M.Sc. The report indicates that approximately three hectares of wetland habitat was identified on the adjoining property to the south. Vegetation observed in the wetland included Leatherleaf *(Chamaedaphne clyculata),* Rhodora *(Rhododendron canadense),* Sheep Laurel *(Kalmia Angustifolia),* Tamarack *(Larix laricina),* and Soft Rush *(Juncus effusus).* Vegetation in areas upland of the wetland included Wild Raisin *(Viburnum nudum)*,

Balsam Fir *(Abeis Balsamea),* Gray Birch *(Betula populifolia),* Starflower *(Trientalis borealis)* and Wild Lilly of the Valley *(Maianthemum canadense).*

The results of the two wetland delineations confirm that the wetland, in total, is 3.7 hectares in area. The Project will include the infilling of 0.7 hectares of this wetland on PID 00939744. The remaining 3 hectares of wetland will not be impacted by the construction of the Project.

3.1.11 Birds and Bird Habitat

Roland Chiasson, a biologist with Aster Group Environmental Services Co-op was retained by Hive to conduct a bird survey within the Project footprint. The report has been provided under separate cover and is included in Appendix H (Aster Group Environmental Services Co-op's *"CV Homes Bird Survey"* dated June 21, 2021).

The purpose of the habitat assessment was to determine the quantity and quality of the bird habitat that exists within the Development Area, and to identify any bird Species of Conservation Concern (SOCC) in the area.

Prior to conducting the field reconnaissance, desktop data provided by the Maritime Bird Breeding Atlas and ACCDC was reviewed to preliminarily determine birds that are known or suspected to be present within a 100-kilometre radius of the project footprint. Particular to the bird habitat survey, the database search provided the following information:

- Reported observations of rare and endangered birds; and
- Expert Opinion Maps identifying species that have not been reported but are expected to be present based upon estimates of habitat and wildlife distribution.

Recognized bird survey techniques were followed by the biologist in the field to determine the presence of suitable bird habitat or bird behaviour to determine whether any endangered or bird species at risk were present in the Project area.

According to the report provided by Aster Group Environmental Services Co-op, bird species at risk or species of conservation including Bobolink *(Dolichonyx oryzivorus)*, Rusty Blackbird *(Euphagus carolinus)*, Common Nighthawk *(Chordeiles minor),* and Eastern Kingbird *(Tyrannus tyrannus)* in a suitable habitat within 100-kilometres of the Site had been identified in the ACCDC data. However, the biologist did not observe or hear any of the aforementioned birds during the field study. The biologist also indicated that the habitat available for species at risk is limited as the majority of the Site appears to have been previously cleared. The biologist did indicate that

hardwood trees and common bird species were observed on the Site. To mitigate risk to nesting/breeding birds, all clearing and grubbing will be completed outside of the nesting/breeding bird season, as recommended by Environment Climate Change Canada (ECCC).

The Project is situated in Zone C3 of the nesting zones in Canada (as outlined by the Government of Canada). The regional nesting period in this area is Mid-April to Late-August; therefore, the clearing and grubbing is proposed to take place outside of these dates. In the event that the clearing/grubbing cannot be completed outside of the nesting/breeding season, a bird biologist will be present on-site during the work to prevent accidental injury or death to nesting/breeding birds.

3.1.12 Environmentally Sensitive Areas

There are no environmentally sensitive areas reported within proximity to the Site.

3.2 Cultural Features

3.2.1 Traditional Use

The area surrounding the Site consists of suburban residential development. The Site and surrounding area are not known to be used provincially, federally or locally for tourism operations or cultural activities, nor is it used for hunting, fishing, gathering or other traditional uses by First Nations.

There is no known heritage or building heritage resources/areas such as historic sites, buildings or structures, national/provincial parks, fossil sites within proximity to the Site.

3.2.2 Archaeology and Heritage Resources

A map of the Site and surrounding area was obtained from the New Brunswick Heritage and Archaeological Services Branch to determine whether any known or suspected archaeological sites may be present in the area. The map indicates that there are no known heritage resources or archaeology sites in the area surrounding the Project. The map is presented in Appendix I.

3.2.3 Existing and Historic Land Uses

The adjoining properties immediately north and west of the Site are occupied by single-family or two-unit residential dwellings that are privately owned. The adjoining properties to the south are vacant and vegetated and the adjoining property to the east is a walking trail; these properties are both owned by the City of Moncton. Roadways in the area (Augusta Terrace to the north,

Muirfield Drive to the east, Ryan Street to the west and Satara Drive to the south) are all owned and operated by the City of Moncton.

The Site is situated in an existing subdivision in the north end of Moncton; the Site and surrounding areas were historically vacant and wooded prior to development for residential use. The residential subdivisions in proximity to the Site have been predominantly developed over the last 20 years.

Historical aerial photography confirms that the Site and surrounding lands have been vacant woodland/wetland since at least 1944. According to NBDELG records, the Site is not registered within the provincial contaminated sites management database. Based on our review of the historical land use of the property and other supplementary records, the Site and adjoining lands are not suspected to be contaminated sites.

3.3 Socio-Economic Considerations

The project will have an overall positive effect on the local economy. New housing options in an already developed area within the municipal boundary will help to close the gap associated with the current housing shortage in the City of Moncton. It will also reduce potential for additional urban sprawl and result in a reduction in greenhouse gas emissions related to 1) commuting into and out of the city and 2) providing alternative options for transportation (i.e., walking, biking, skateboarding, etc.) due to the developments close proximity to schools, amenities and public transit.

The construction of new residential dwellings will generate property tax revenue for the City of Moncton. It will also provide work for laborers employed by a New Brunswick-owned and operated company. The completion of the work will permit the continued economic growth of the City of Moncton.

4.0 IDENTIFICATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The Site is situated within an existing subdivision and will be developed for the construction of 50, two-unit residential dwellings. The development will include the construction of storm water detention ponds and municipal water, storm and sanitary sewer infrastructure to service the new residential units.

The proposed undertaking will involve new construction and development within an existing subdivision. Potential environmental impact considerations associated with the expansion project could include the following:

- Solid waste generated as part of general construction activities (i.e., excess PVC piping, concrete, asphalt, cardboard, plastics etc.). The **impact avoidance** measures used to limit the impact associated with construction waste is discussed in further detail in Section 5.0.
- Disturbance of fauna that may be present in the area. The **impact avoidance** measures used to mitigate the potential impact to fauna is discussed in further detail in Section 5.0.
- Noise and airborne emissions (volatile organics) associated with the operation of machinery, vehicles and equipment. The **impact reduction** used to mitigate the effects of noise and airborne emissions during construction are discussed in further detail in Section 5.0.
- Dust associated with exposed soils and/or wind. The **impact reduction** used to mitigate dust emissions during construction are discussed in further detail in Section 5.0.
- Sediment in runoff during construction. The **impact reduction** used to mitigate sediment runoff and erosion during construction are discussed in further detail in Section 5.0.
- Minor releases of hydraulic/diesel spills from equipment, vehicles and machinery operating on-site. The **impact reduction** used to mitigate potential fuel spills during construction are discussed in further detail in Section 5.0.
- Result in the net loss of 0.7 hectares of a 3.7-hectare wetland. The **impact compensation** associated with the loss of wetland is discussed in further detail in Section 5.0.

5.0 SUMMARY OF PROPOSED MITIGATION

A summary of the proposed mitigation efforts associated with the Undertaking are outlined herein. For purposes of this Project, there are no environmental impacts that cannot be mitigated through the establishment of compensation projects, best management practices (BMPs) and/or proper management and operational practices. The mitigation measures to avoid, reduce and compensate for any potential impacts to the surrounding environment are presented in the following sections.

5.1 Impact Avoidance

5.1.1 Waste

To avoid the potential impact to the environment associated with construction waste generated on-site, the construction site will have multiple disposal bins for solid waste. All solid waste generated on-site will be temporarily placed into designated disposal bins. The waste bins will be taken off-site for disposal at an approved facility (either a C&D disposal facility or the sanitary landfill). No construction waste will remain on-site following the completion of the Project.

5.1.2 Disturbance of Fauna

To avoid the potential impact to fauna (predominantly birds) identified in the area, any grubbing or clearing of the Site will take place outside of the breeding/nesting season as advised by Environmental Climate Change Canada (i.e., outside of the months of mid-April to late-August).

ACCDC data identified the presence of two other species (Wood Turtle *(Glyptemys insculpta)* and Bat hibernaculum or bat species) within a 5-kilometre radius of the Site. Given the fragmented nature of the wetland (i.e., no ability to migrate in or out of the habitat) and lack of aquatic habitat (i.e., no substantial depth of water), it is unlikely that the area is suitable habitat for Wood Turtles. There is no known hibernaculum on-site that would suggest that bats would overwinter on the property.

5.1.3 Leak/Spill Prevention Plans

The contractor will have a spill prevention plan prepared prior to commencement of construction. The plan will require all operating machinery on-site to be in good working condition and designate areas for overnight equipment storage (if necessary). Overnight storage of vehicles and materials will not be situated in proximity to the wetland on the southern portion of the Site. Bulk storage of fuel for vehicles/equipment will not be present on-site at any point in time and vehicles/equipment will not be fuelled or maintained on-site. Any routine maintenance or fuelling will take place off-site.

5.1.4 Environmental and Safety Training for Personnel On-Site

All construction and operation personnel will have the appropriate health and safety training prior to working on-site. In addition, all equipment operating on-site will be equipped with emergency spill kits in the event of a minor fuel release (i.e., hydraulic oil, diesel). Staff will be trained in emergency response measures in the event of a minor spill (i.e., placement of oil absorbent booms, absorbent granular material, etc.). Any minor leaks will be immediately reported to the site supervisor and the NBDELG.

5.2 Impact Reduction

5.2.1 Noise and Airborne Emissions

To reduce the potential impact to the surrounding environment associated with noise and airborne emissions (volatile organics), the operation of machinery, vehicles and equipment will take place during routine business hours (7 am to 7pm, Monday through Friday). This will also be mitigated by ensuring equipment is in good condition and by establishing a no-idling policy. Any

increase in noise levels or airborne emissions will only take place during the construction phase; upon completion of the Project, there will be no long-term increase in noise or airborne emissions on the Site in comparison to surrounding areas, as the land use will be the same as surrounding areas (i.e., typical residential subdivision).

5.2.2 Dust Emissions

In order to mitigate fugitive dust emissions, the Proponent will minimize exposed stockpile areas of overburden material during the construction phases of the Project (i.e., will be reused or taken off-site). If dust becomes an issue, water trucks will be used to moisten exposed soils to limit dust emissions. Upon completion of work in any area of the Site, appropriate stabilization methods (i.e., hydroseeding, sodding or mulching) will be implemented to reduce the potential for dust emissions.

5.2.3 Erosion and Sedimentation

Prior to commencement of the project, erosion and sediment control (ESC) structures will be installed based upon the recommendations of a licensed civil engineer. To reduce or eliminate potential for erosion and/or sedimentation, the ESC structures will be inspected on a regular basis to ensure that they are functioning as intended.

Excavated soils, grubbings and fill will not be stored in immediate proximity to the wetland located to the south of the Site to reduce potential for off-site impacts. In the event of a major rain event, stockpiled materials will be taken off-site or tarped to eliminate the potential for sediment in runoff.

5.2.4 Stormwater Management Plan

A stormwater management plan was developed for the Project in accordance with the City of Moncton requirements. The plan includes the construction of a stormwater detention pond, which will mitigate post-construction, off-site stormwater flows. This will mitigate impacts to downstream receiving bodies of water.

5.2.5 Fuel Oil Spills from Equipment used during Construction and Operation

To reduce the potential for minor fuel spills during construction and operation activities, all equipment should be in good working condition and free of any known fluid leaks. Inspection of the equipment will also be completed regularly in order to prevent any equipment failure which could potentially cause a fuel release. Spill kits will be available in proximity to any fuel-operated

machinery in the event of an unexpected release. Any releases of fuel would be reported to NBDELG and remediated immediately in accordance with provincial guidelines.

5.2.6 Site Inspections

The Project will be inspected by representatives of engineering firms for geotechnical, civil and material testing services in accordance with the requirements of the City of Moncton.

In addition, the site supervisor will complete daily inspections of all equipment and ESC structures. Any equipment determined not to be in good working order will be removed from the Site. In the event that the site supervisor identifies a deficiency in ESC structures on-site, work on-site will stop until the ESC structure has been restored to operate as intended.

5.3 Impact Compensation

5.3.1 Infilling of the Existing Wetland

Approximately 0.7 hectares of a 3.7-hectare wetland will be infilled as part of the Project. The infilling of the wetland cannot be avoided in order to achieve the density required to make the Project economically feasible. The Project will leave the remaining 3 hectares of wetland on the adjoining property to the south untouched. In order to compensate for the loss of wetland, the Proponent has committed to funding a compensation project to mitigate the net loss of wetland. The compensation will be conducted based on the requirements outlined in the NBDELG's "Wetland Compensation General Guidance" dated August 19, 2020.

6.0 PUBLIC AND FIRST NATIONS ENGAGEMENT

It is understood that the Project will require engagement with the public and First Nations communities in the area. Once this EIA registration document has been posted on the Government of New Brunswick website for public access, Hive will conduct engagement with the public and First Nations communities that might be impacted by the project. The Proponent is committed to addressing questions, concerns and suggestions raised by the public or First Nations groups throughout the approval process.

7.0 APPROVAL OF PROJECT

The following approval is required for the proposed project:

- Authorization/conditional approval of the undertaking under the provincial EIA requirements outlined in NB Regulation 87-83.

- Watercourse and Wetland Alteration Permit under the Clean Water Act in NB Regulation 90-80.

The Proponent has already engaged the City of Moncton with regards to the construction permit and approvals process, which are not being overseen by Hive Engineering. However, these approvals are being carried out in tandem with the submission of the EIA registration document. No other permits or approvals are known to be required at this time.

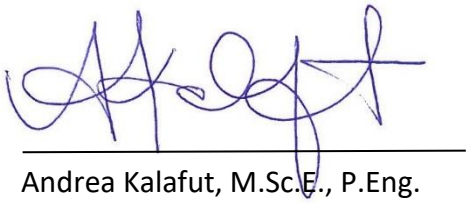
8.0 FUNDING

The project is solely funded by the Proponent and does not include any municipal, provincial, or federal funding.

9.0 SIGNATURE

This EIA registration document was prepared by a team of professionals from Hive Engineering Limited on behalf of the Proponent.

Date: December 1, 2021



Andrea Kalafut, M.Sc.E., P.Eng.
Senior Environmental Engineer
Hive Engineering Limited

10.0 CLOSURE

This report has been prepared for the sole benefit of RobAly Homes Inc. This report and any of its content cannot be relied upon by any other person or entity without the express written consent of Hive Engineering Limited and RobAly Homes Inc. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Hive Engineering Limited accepts no responsibility for damages incurred by any third party resulting from decisions or actions based on the content of this report.

The conclusions presented herein represent the best technical judgement of Hive Engineering personnel based on current engineering and scientific practices and environmental standards at the time the work was performed. The conclusions are based on the site conditions encountered at the time the work was performed at the locations presented in this report.

11.0 REFERENCES

Aster Group Environmental Services Co-op. “CV Homes Bird Survey”. June 21, 2021.

Atlantic Canada Conservation Data Centre. “Data Report 6980: Moncton, NB”. Juned 22, 2021.

Atlas of Canada. Toporama Map, obtained by Hive Engineering on November 30, 2021.

J.R. Daigle Engineering Ltd. “Magnetic Hill Estates Subdivision, Unit No. 8 Roadways, Water & Sewer Services As-Built”. July 2005.

New Brunswick Department of Environment and Local Government’s *“A Guide to Environmental Impact Assessment in New Brunswick”* dated January 2018.

New Brunswick Department of Environment and Local Government, Watershed Protected Area Designation Order. Clean Water Act. November 2001.

New Brunswick Department of Environment, Wellfield Protection Area Designation Order. Clean Water Act. September 2000.

New Brunswick Department of Tourism, Heritage and Culture (Heritage and Archaeological Services Branch). Archaeology mapping. November 2021.

New Brunswick Department of Natural Resources. “Bedrock Geology of New Brunswick”. Minerals, Policy and Planning Division. Map NR-1 (2008 Edition). Scale 1:500,000 (Revised December 2008).

Overdale Environmental Inc. “Standard Wetland Delineation, Belfry Street, Moncton, NB, PID 00939744”. June 16, 2020.

Overdale Environmental Inc. “Wetland Delineation Report, Satara Drive, Moncton, NB”. July 12, 2021.

Rampton, V.N., 1984. “Generalized surficial geology map of New Brunswick” Department of Natural Resources and Energy, Minerals, Policy and Planning Division. NR-8 Scale 1:500,000.

WSP. “New Residential Development, Street Layout and Servicing Schematic”. February 4, 2021.

WSP. “Record Drawing Plan and Profile, Satara Drive, Liberty Hill Estates, Unit 5, Phase 2, Moncton, New Brunswick”. January 2019.

WSP. Topographic Map of Site, “Job: 201-08268”.

WSP. “Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of Promenade Satara Drive, Cit y of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick”. December 11, 2020.

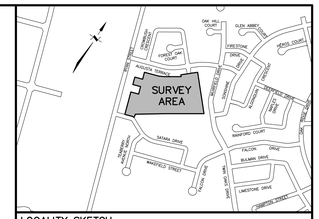
Service New Brunswick. Registry and Mapping Services. (www.planetsnb.ca).

APPENDIX A

Preliminary Subdivision Plan

hive ENGINEERING

APPROVALS



LOCALITY SKETCH

LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
SURVEY SYSTEM COORDINATE MONUMENT		FOUND	f.d.
STANDARD SURVEY MARKER PLACED		CALCULATED	(c)
STANDARD SURVEY MARKER FOUND		REGISTERED	Reg.
CALCULATED COORDINATE POINT		DERIVED FROM A SOURCE OTHER THAN THE SURVEYOR'S MEASUREMENTS	(d)
TABULATED COORDINATE REFERENCE		NBLS REGISTRATION NUMBER	#364
SCRIBED WOODEN SURVEY POST		SQUARE METRE(S)	m²
WOODEN SURVEY POST		MILLIMETER(S)	mm
SQUARE IRON BAR FOUND		HECTARE	ha
IRON PIPE FOUND		RADIUS	R
ROUND IRON BAR FOUND		DIAMETER	ø
BOREHOLE / TESTPIT		NEW BRUNSWICK LAND SURVEYOR	NBLS
WATER VALVE / FIRE HYDRANT		ELEVATION	ELEV.
CATCH BASIN		INVERT	INV.
CURB MOUNTED CATCH BASIN		FENCE	
SQUARE CATCH BASIN		OVERHEAD LINE(S)	
SLUICE BOX		CENTRELINE	
MANHOLE		UNDERGROUND LINE(S)	
UTILITY POLE / GUY		CURB	
CULVERT		TOP OF ROCK	
LIGHT STANDARD		BOTTOM OF ROCK	
TREE(S) CONIFER OR DECIDUOUS		TOP OF SLOPE	
		BOTTOM OF SLOPE	
WELL		WATER LINE	
SIGN		TREELINE	
PAINTED LINE		SANITARY SEWER LINE	
LANDS DEALT WITH BY THIS PLAN		STORM SEWER LINE	
		ORDINARY HIGH WATER MARK	

UTILITIES APPROVAL

PURSUANT TO SECTION 5 OF "DESIGNATED EASEMENTS REGULATION" 84-217, THE PUBLIC UTILITY EASEMENT(S) ON THIS PLAN VEST(S) IN NEW BRUNSWICK POWER CORPORATION AND BELL CANADA, WITH THE FILING OF THIS PLAN.

DATED
NEW BRUNSWICK POWER CORPORATION

DATED
BELL CANADA

DOCUMENT

PURSUANT TO SECTION 88(6)(b) OF THE COMMUNITY PLANNING ACT, 2017, c.19, THE FUTURE STREET(s) SHOWN ON PLAN 37945491 VESTED IN THE CITY OF MONCTON WITH THE FILING OF SAID PLAN.

OWNER'S STATEMENT

WE, THE UNDERSIGNED, DO HEREBY CERTIFY THAT WE REPRESENT THE REGISTERED OWNERS OF THE PROPERTY BEING SUBDIVIDED HEREON AND DO HEREBY GRANT APPROVAL TO THIS PLAN.

DAWN ARNOLD (MAYOR)
FOR: THE CITY OF MONCTON

BARBARA QUIGLEY (CITY CLERK)
FOR: THE CITY OF MONCTON

OWNER'S STATEMENT

I, THE UNDERSIGNED, DO HEREBY CERTIFY THAT I REPRESENT THE REGISTERED OWNER OF THE PROPERTY BEING SUBDIVIDED HEREON AND DO HEREBY GRANT APPROVAL TO THIS PLAN.

ROBERT LEBLANC – PRESIDENT
FOR ROBALY HOMES INC.

DOCUMENTS

PIDs 939744 AND 701813181
IMMEUBLES PERFECTION / PERFECTION REALTY INC. TO ROBALY HOMES INC.
DATED 2018-06-15
REGISTERED 2018-06-15
TRANSFER NUMBER 38093200

CROs DATED:

PURPOSE OF PLAN

TO AMEND FUTURE STREET, PLAN 37945491.
-TO CREATE LOTS 20-1 TO 20-50 FOR RESIDENTIAL BUILDING PURPOSES.
-TO CREATE LOT 20-1000, TO BE CONVEYED TO THE CITY OF MONCTON.
-TO CREATE RUE BELFRY STREET (PUBLIC) AND COURT 1 (PUBLIC), AS PURSUANT TO 88(6)(a) OF THE COMMUNITY PLANNING ACT, 2017.
-TO CREATE PUBLIC UTILITY EASEMENTS (P.U.E.) SHOWN THUS — — —, PURSUANT TO SECTION 5, REGULATION 84-217, OF THE COMMNITY PLANNING ACT.

NOTES

-DIRECTIONS ARE N.B. GRID AZIMUTHS DERIVED FROM THE SERVICE NEW BRUNSWICK'S HIGH PRECISION NETWORK ACTIVE CONTROL SYSTEM.
-THE SCALE FACTOR USED WAS 1.0000.
-THE DOCUMENT NUMBERS REFERRED TO ON THIS PLAN ARE THOSE OF THE COUNTY REGISTRY OFFICE.
-ADJACENT OWNER INFORMATION OBTAINED FROM SNB RECORDS.
-AS USED HEREIN, THE WORD CERTIFY SHALL MEAN AN EXPRESSION OF THE CONSULTANT'S PROFESSIONAL OPINION TO THE BEST OF IT'S INFORMATION, KNOWLEDGE AND BELIEF, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE BY THE CONSULTANT.
-ALL DISTANCES SHOWN ARE CALCULATED GRID DISTANCES.
-CERTIFICATION IS NOT MADE AS TO LEGAL TITLE, BEING THE DOMAIN OF A LAWYER, NOR TO THE ZONING & SETBACK BY-LAWS OR REGULATIONS, BEING THE DOMAIN OF A DEVELOPMENT OFFICER.
-CERTIFICATION IS NOT MADE AS TO COVENANTS SET OUT IN THE DOCUMENT(S) AND THE LOCATION OF ANY UNDERGROUND SERVICES AND/OR FIXTURES, PERMANENT OR OTHERWISE.
-FIELD SURVEY WAS COMPLETED AUGUST 17, 2020.

UNIT #10
AMENDING SUBDIVISION PLAN:

MAGNETIC HILL ESTATES SUBDIVISION

AMENDING LIBERTY HILL SUBDIVISION UNIT 5, PHASE 2 PLAN 37945491
SITUATED ON THE NORTH SIDE OF PROMENADE SATARA DRIVE,
CITY OF MONCTON, PARISH OF MONCTON,
COUNTY OF WESTMORLAND, PROVINCE OF NEW BRUNSWICK

SCALE 1:500 — 10 0 10 20 30 40 metres

wsp
1070 ST. GEORGE BOULEVARD, SUITE 160
MONCTON, NEW BRUNSWICK
E1E 4C9
PHONE: 506 857-9675
WWW.WSP.COM

SURVEYOR'S STATEMENT

I HEREBY CERTIFY THAT THIS PLAN IS CORRECT.

NEW BRUNSWICK LAND SURVEYOR #381 BRANDON M. MCCLELLAND
SIGNATURE
2020-12-11
DATE
GÉOMÈTRE DU NOUVEAU-BRUNSWICK

TENTATIVE

VALIDATION SEAL

A.N.B.L.S. No. – A.A.-G.N.-B.

DRAWN:	NJB	FIELD:	SGD
JOB:	201-08268	CAD:	201-08268-600
CHECKED:	–		
ZONE:	14T-86		

APPENDIX B

As-Builts

hive ENGINEERING

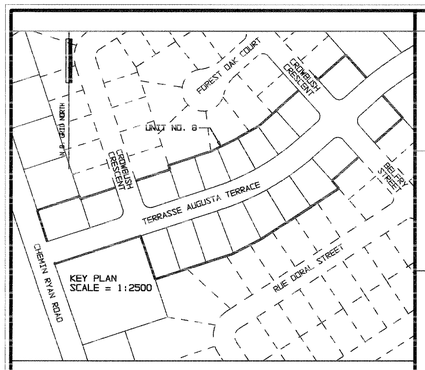
03-15a

MAGNETIC HILL ESTATES SUBDIVISION

UNIT No. 8

ROADWAYS, WATER & SEWER SERVICES

AS - BUILT



DWG. No.	DRAWING TITLE
ME-1-AB-1	WATERMAIN AS-BUILT
ME-1-AB-2	SANITARY & STORM MAIN AS-BUILT
ME-1-AB-3	SERVICES AS-BUILT

PIPE WORK

CONTRACTOR:
PERFECTION CONTRACTING

FOREMAN:
GUY BOUCHARD

INSPECTOR:
PAUL RICHARD

CONTRUCTION PERIOD:
JANUARY - JUNE, 2003

INSPECTION & PROVISIONAL ACCEPTANCE:
DATE: APRIL 11, 2003
PRESENT: BRENDA DORE-KIDNEY , CITY OF MONCTON
ERNIE WEAVER , CITY OF MONCTON
GARY BURLOCK , CITY OF MONCTON
GUY BUCHARD , PERFECTION CONTRACTING
PAUL RICHARD , J.R. DAIGLE ENGINEERING LTD.

CURB & GUTTER WORK

CONTRACTOR:
BASTECH CONSTRUCTION LTD.

FOREMAN:
ZOEL BASQUE

INSPECTOR:
SIMON CHIPPER

CONTRUCTION PERIOD:
JUNE, 2003

Developer : EASTCAN TRADING LIMITED
Consultant : J.R. DAIGLE ENGINEERING LTD.

C:\MAGNETICHILL\UNIT8\ABCOVER JULY, 2005

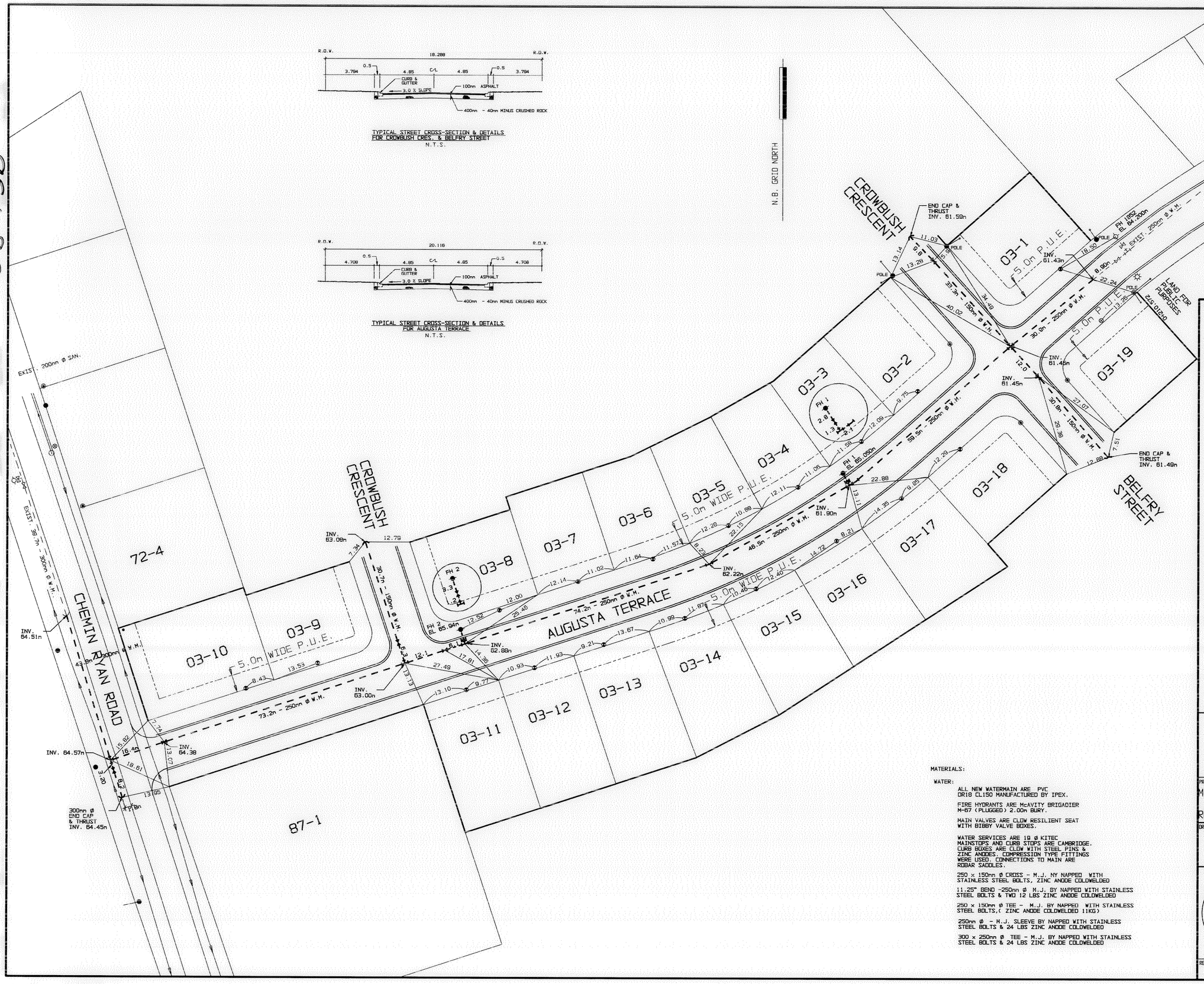
03-15a

MAGNETIC HILL ESTATES SUBDIVISION
UNIT 8
ROADWAYS, WATER & SEWER SERVICES
COVER SHEET
AUGUSTA TERR., CROWBUSH CRES., BELLFRY ST.
J.R. DAIGLE ENGINEERING LTD
1 OF 4

03-156

TYPICAL STREET CROSS-SECTION & DETAILS
FOR CROWBUSH CRES. & BELFRY STREET
N.T.S.

TYPICAL STREET CROSS-SECTION & DETAILS
FOR AUGUSTA TERRACE
N.T.S.



LEGEND

ITEM	EXISTING	AS-BUILT
SANITARY MANHOLE	○	○
STORM MANHOLE	⊘	●
SANITARY SEWER	——	——
STORM SEWER	- - -	- - -
CATCH BASIN	⊘	⊘
SLUICE BOX	▥	▮
CULVERT	>—<	>—<
WATERMAIN	— —	— —
GATE VALVE	⋈	⋈
HYDRANT	◇	◆
TEE	⊥	⊥
BEND	⌒	⌒
END CAP	)	)
CURB STOP	⊗	⊗
UTILITY POLE	● P/E	● P/E
GUY WIRE	—	—
LIGHT STANDARD	☼	☼
OVERHEAD UTILITY LINE	—O/H—	—O/H—
UNDERGROUND UTILITY	—U/G—	—U/G—
FENCE	—x—	—x—
TREE LINE	~~~	~~~
EDGE OF BANK	"'"'"'"	"'"'"'"
MARSH	⁂	⁂
GROUND ELEVATION	45.23	45.23
SURVEY MARKER	⊙	⊙
N.B. GRID MONUMENT	△	△
SIGN	▮	▮
CURB & GUTTER	═══	═══

NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO GEODETIC DATUM AND REFERRED TO THE EXTREME TOP OF FIRE HYDRANT No. 1853 ELEV. 64.20m.
2. FINISH CENTERLINE (C/L) GRADE IS THE FUTURE TOP OF ASPHALT, THEREFORE THE CRUSHED ROCK GRADE IS 100mm LOWER THAN FINISH CENTERLINE GRADE.
3. ALL MATERIALS AND CONSTRUCTION METHODS IS IN ACCORDANCE WITH THE CITY OF MONCTON STANDARD MUNICIPAL SPECIFICATIONS.

MATERIALS:

WATER:

ALL NEW WATERMAIN ARE PVC DR18 CL150 MANUFACTURED BY IPEX.

FIRE HYDRANTS ARE McAVITY BRIGADIER M-67 (PLUGGED) 2.00m BURY.

MAIN VALVES ARE CLOW RESILIENT SEAT WITH BIBBY VALVE BOXES.

WATER SERVICES ARE 19 ø KITEC MAINSTOPS AND CURB STOPS ARE CAMBRIDGE. CURB BOXES ARE CLOW WITH STEEL PINS & ZINC ANODES. COMPRESSION TYPE FITTINGS WERE USED. CONNECTIONS TO MAIN ARE ROBAR SADDLES.

250 x 150mm ø CROSS - M.J. NY NAPPED WITH STAINLESS STEEL BOLTS, ZINC ANODE COLDWELDED

11.25° BEND -250mm ø M.J. BY NAPPED WITH STAINLESS STEEL BOLTS & TWO 12 LBS ZINC ANODE COLDWELDED

250 x 150mm ø TEE - M.J. BY NAPPED WITH STAINLESS STEEL BOLTS,(ZINC ANODE COLDWELDED 11KG)

250mm ø - M.J. SLEEVE BY NAPPED WITH STAINLESS STEEL BOLTS & 24 LBS ZINC ANODE COLDWELDED

300 x 250mm ø TEE - M.J. BY NAPPED WITH STAINLESS STEEL BOLTS & 24 LBS ZINC ANODE COLDWELDED

J. R. DAIGLE ENGINEERING LTD.
INGENIERIE LTEE.

PROJECT TITLE:
MAGNETIC HILL ESTATES SUBDIVISION
UNIT No. 8
ROADWAYS, WATER & SEWER SERVICES

DRAWING TITLE:
WATERMAIN AS-BUILT

REGISTERED PROFESSIONAL ENGINEER Province of New Brunswick #3239 M. J. Bobineau 2005-06-06 DATE Province du Nouveau-Brunswick INGENIEUR ENREGISTRE

DESIGNED BY:	CHECKED BY:
M.B.	J.R.D.
DRAWN BY:	CHECKED BY:
A.J.L.	J.R.D.
DATE:	SCALE:
JULY, 2005	HORIZ-1:500
DATE ISSUED:	

REVISION: 0

DRAWING No.: ME-1-AB-1 of 3

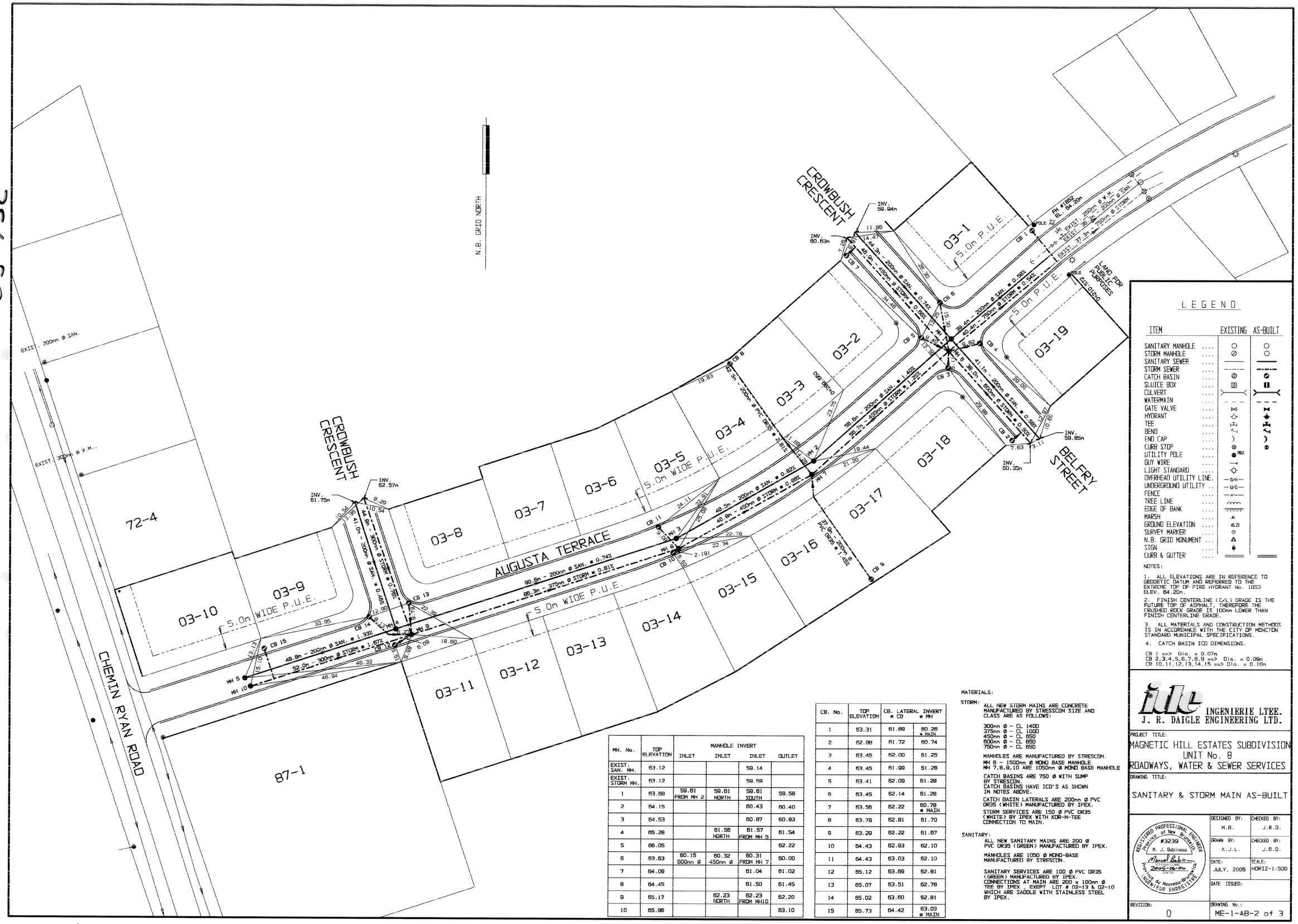
MAGNETIC HILL ESTATES SUBDIVISION
UNIT 8
ROADWAYS, WATER & SEWER SERVICES
WATER MAIN
AUGUSTA TERR., CROWBUSH CRES., BELFRY ST.
J.R. DAIGLE ENGINEERING LTD
2 OF 4
C:\MAGNETIC HILL\UNIT8\ABSHT1 JULY, 2005

03-156

03 - 15 b

03-15c

03-15c



MH. No.	TOP ELEVATION	MANHOLE INVERT INLET	INLET	INLET	OUTLET
EXIST. SAN. MH.	63.12			59.14	
EXIST. STORM MH.	63.12			59.59	
1	63.69	59.81 FROM MH 2	59.61 NORTH	59.61 SOUTH	59.58
2	64.15			60.43	60.40
3	64.53			60.87	60.83
4	65.28		61.56 NORTH	61.57 FROM MH 5	61.54
5	66.05				62.22
6	63.63	60.15 600mm ø	60.32 450mm ø	60.31 FROM MH 7	60.00
7	64.09			61.04	61.02
8	64.45			61.50	61.45
9	65.17		62.23 NORTH	62.23 FROM MH10	62.20
10	65.96				63.10

CB. No.	TOP ELEVATION	CB. LATERAL INVERT @ CB	@ MH
1	63.31	61.89	60.26 @ MAIN
2	62.98	61.72	60.74
3	63.45	62.00	61.25
4	63.45	61.99	61.28
5	63.41	62.09	61.28
6	63.45	62.14	61.28
7	63.56	62.22	60.78 @ MAIN
8	63.79	62.81	61.70
9	63.29	62.22	61.67
10	64.43	62.93	62.10
11	64.43	63.03	62.10
12	65.12	63.69	62.81
13	65.07	63.51	62.78
14	65.02	63.60	62.81
15	65.73	64.42	63.03 @ MAIN

LEGEND

ITEM	EXISTING	AS-BUILT
SANITARY MANHOLE	○	○
STORM MANHOLE	⊘	○
SANITARY SEWER		
STORM SEWER		
CATCH BASIN	⊘	■
SLUICE BOX	▥	
CULVERT		
WATERMAIN		
GATE VALVE	⋈	⋈
HYDRANT	☆	☆
TEE	⊤	⊤
BEND	)	)
END CAP	⊗	⊗
CURB STOP	●	●
UTILITY POLE	→	→
GUY WIRE	☼	☼
LIGHT STANDARD	—O/H—	—O/H—
OVERHEAD UTILITY LINE	—U/G—	—U/G—
UNDERGROUND UTILITY	—x—	—x—
FENCE	~~~	~~~
TREE LINE	""	""
EDGE OF BANK	⊻	⊻
MARSH	65.28	65.28
GROUND ELEVATION	⊙	⊙
SURVEY MARKER	△	△
N.B. GRID MONUMENT	●	●
SIGN		
CURB & GUTTER		

NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO GEODETIC DATUM AND REFERRED TO THE EXTREME TOP OF FIRE HYDRANT No. 1853 ELEV. 64.20n.

2. FINISH CENTERLINE (C/L) GRADE IS THE FUTURE TOP OF ASPHALT, THEREFORE THE CRUSHED ROCK GRADE IS 100mm LOWER THAN FINISH CENTERLINE GRADE.

3. ALL MATERIALS AND CONSTRUCTION METHODS IS IN ACCORDANCE WITH THE CITY OF MONCTON STANDARD MUNICIPAL SPECIFICATIONS.

4. CATCH BASIN ICD DIMENSIONS.

CB 1 ==> Dia. = 0.07n
CB 2,3,4,5,6,7,8,9 ==> Dia. = 0.09n
CB 10,11,12,13,14,15 ==> Dia. = 0.10n

MATERIALS:

STORM:
ALL NEW STORM MAINS ARE CONCRETE MANUFACTURED BY STRESSCON SIZE AND CLASS ARE AS FOLLOWS:

300mm ø - CL 1400
375mm ø - CL 1000
450mm ø - CL 650
600mm ø - CL 650
750mm ø - CL 650

MANHOLES ARE MANUFACTURED BY STRESCON.
MH 6 - 1500mm ø MONO BASE MANHOLE
MH 7,8,9,10 ARE 1050mm ø MONO BASE MANHOLE

CATCH BASINS ARE 750 ø WITH SUMP BY STRESCON.
CATCH BASINS HAVE ICD'S AS SHOWN IN NOTES ABOVE.

CATCH BASIN LATERALS ARE 200mm ø PVC DR35 (WHITE) MANUFACTURED BY IPEX.

STORM SERVICES ARE 150 ø PVC DR35 (WHITE) BY IPEX WITH KOR-N-TEE CONNECTION TO MAIN.

SANITARY:
ALL NEW SANITARY MAINS ARE 200 ø PVC DR35 (GREEN) MANUFACTURED BY IPEX.

MANHOLES ARE 1050 ø MONO-BASE MANUFACTURED BY STRESCON.

SANITARY SERVICES ARE 100 ø PVC DR35 (GREEN) MANUFACTURED BY IPEX.
CONNECTIONS AT MAIN ARE 200 x 100mm ø TEE BY IPEX , EXEPT LOT # 02-13 & 02-10 WHICH ARE SADDLE WITH STAINLESS STEEL BY IPEX.

J. R. DAIGLE ENGINEERING LTD.
INGENIERIE LTEE.

PROJECT TITLE:
MAGNETIC HILL ESTATES SUBDIVISION
UNIT No. 8
ROADWAYS, WATER & SEWER SERVICES

DRAWING TITLE:
SANITARY & STORM MAIN AS-BUILT

REGISTERED PROFESSIONAL ENGINEER PROVINCE of New Brunswick #3239 M. J. Dubineau 2005-06-06 DATE Province du Nouveau-Brunswick INGENIEUR ENREGISTRE

DESIGNED BY:	CHECKED BY:
M.B.	J.R.D.
DRAWN BY:	CHECKED BY:
A.J.L.	J.R.D.
DATE:	SCALE:
JULY, 2005	HORIZ-1:500
DATE ISSUED:	

REVISION: 0

DRAWING No.: ME-1-AB-2 of 3

MAGNETIC HILL ESTATES SUBDIVISION
UNIT 8
ROADWAYS, WATER & SEWER SERVICES
SANITARY & STORM SEWER MAINS
AUGUSTA TERR., CROWBUSH CRES., BELFRY ST.
J.R. DAIGLE ENGINEERING LTD

C:\MAGNETIC HILL\UNIT8\ABSHT2 JULY, 2005

3 of 4

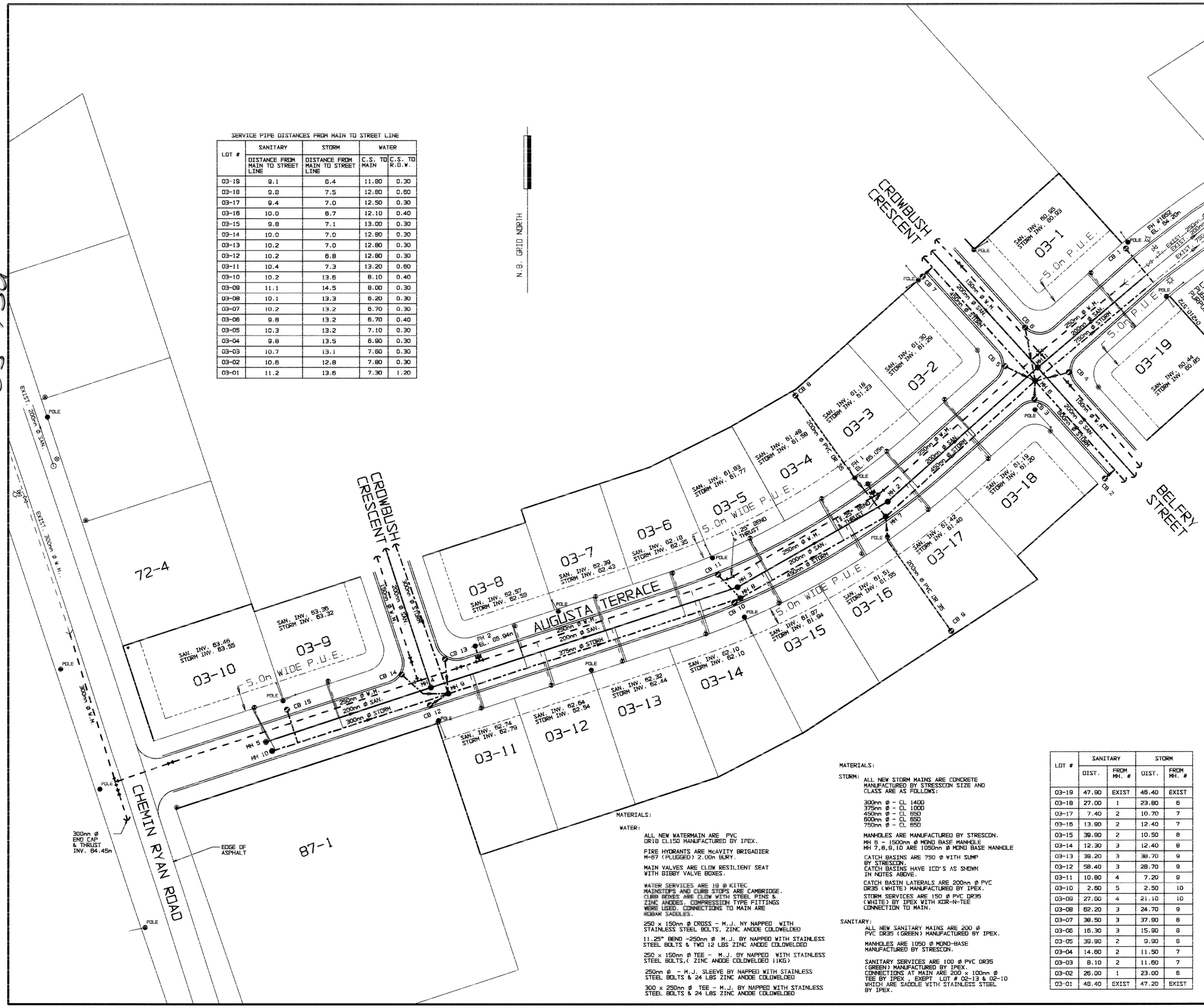
03 - 15 d

03-15d

SERVICE PIPE DISTANCES FROM MAIN TO STREET LINE

LOT #	SANITARY	STORM	WATER	
	DISTANCE FROM MAIN TO STREET LINE	DISTANCE FROM MAIN TO STREET LINE	C.S. TO MAIN	C.S. TO R.O.W.
03-19	9.1	6.4	11.80	0.30
03-18	9.8	7.5	12.80	0.60
03-17	9.4	7.0	12.50	0.30
03-16	10.0	6.7	12.10	0.40
03-15	9.8	7.1	13.00	0.30
03-14	10.0	7.0	12.80	0.30
03-13	10.2	7.0	12.80	0.30
03-12	10.2	6.8	12.80	0.30
03-11	10.4	7.3	13.20	0.60
03-10	10.2	13.6	8.10	0.40
03-09	11.1	14.5	8.00	0.30
03-08	10.1	13.3	6.20	0.30
03-07	10.2	13.2	6.70	0.30
03-06	9.8	13.2	6.70	0.40
03-05	10.3	13.2	7.10	0.30
03-04	9.8	13.5	6.90	0.30
03-03	10.7	13.1	7.60	0.30
03-02	10.6	12.8	7.80	0.30
03-01	11.2	13.6	7.30	1.20

N.B. GRID NORTH



MATERIALS:

WATER:

ALL NEW WATERMAIN ARE PVC DR18 CL150 MANUFACTURED BY IPEX.

FIRE HYDRANTS ARE McAVITY BRIGADIER M-67 (PLUGGED) 2.00m BURY.

MAIN VALVES ARE CLOW RESILIENT SEAT WITH BIBBY VALVE BOXES.

WATER SERVICES ARE 19 ø KITEC MAINSTOPS AND CURB STOPS ARE CAMBRIDGE. CURB BOXES ARE CLOW WITH STEEL PINS & ZINC ANODES. COMPRESSION TYPE FITTINGS WERE USED. CONNECTIONS TO MAIN ARE ROMAR SADDLES.

250 x 150mm ø CROSS - M.J. NY NAPPED WITH STAINLESS STEEL BOLTS, ZINC ANODE COLDWELDED

11.25° BEND -250mm ø M.J. BY NAPPED WITH STAINLESS STEEL BOLTS & TWO 12 LBS ZINC ANODE COLDWELDED

250 x 150mm ø TEE - M.J. BY NAPPED WITH STAINLESS STEEL BOLTS,(ZINC ANODE COLDWELDED 11KG)

250mm ø - M.J. SLEEVE BY NAPPED WITH STAINLESS STEEL BOLTS & 24 LBS ZINC ANODE COLDWELDED

300 x 250mm ø TEE - M.J. BY NAPPED WITH STAINLESS STEEL BOLTS & 24 LBS ZINC ANODE COLDWELDED

MATERIALS:

STORM: ALL NEW STORM MAINS ARE CONCRETE MANUFACTURED BY STRESSCON SIZE AND CLASS ARE AS FOLLOWS:

300mm ø - CL 1400
375mm ø - CL 1000
450mm ø - CL 650
600mm ø - CL 650
750mm ø - CL 850

MANHOLES ARE MANUFACTURED BY STRESCON.
MH 6 - 1500mm ø MONO BASE MANHOLE
MH 7,8,9,10 ARE 1050mm ø MONO BASE MANHOLE

CATCH BASINS ARE 750 ø WITH SUMP BY STRESCON.
CATCH BASINS HAVE ICD'S AS SHOWN IN NOTES ABOVE.

CATCH BASIN LATERALS ARE 200mm ø PVC DR35 (WHITE) MANUFACTURED BY IPEX.

STORM SERVICES ARE 150 ø PVC DR35 (WHITE) BY IPEX WITH KOR-N-TEE CONNECTION TO MAIN.

SANITARY:
ALL NEW SANITARY MAINS ARE 200 ø PVC DR35 (GREEN) MANUFACTURED BY IPEX.

MANHOLES ARE 1050 ø MONO-BASE MANUFACTURED BY STRESCON.

SANITARY SERVICES ARE 100 ø PVC DR35 (GREEN) MANUFACTURED BY IPEX.
CONNECTIONS AT MAIN ARE 200 x 100mm ø TEE BY IPEX , EXEPT LOT # 02-13 & 02-10 WHICH ARE SADDLE WITH STAINLESS STEEL BY IPEX.

LOT #	SANITARY		STORM	
	DIST.	FROM MH. #	DIST.	FROM MH. #
03-19	47.90	EXIST	46.40	EXIST
03-18	27.00	1	23.80	6
03-17	7.40	2	10.70	7
03-16	13.90	2	12.40	7
03-15	39.90	2	10.50	8
03-14	12.30	3	12.40	8
03-13	38.20	3	38.70	9
03-12	58.40	3	28.70	9
03-11	10.80	4	7.20	9
03-10	2.80	5	2.50	10
03-09	27.60	4	21.10	10
03-08	62.20	3	24.70	9
03-07	38.50	3	37.90	8
03-06	16.30	3	15.90	8
03-05	39.90	2	9.90	8
03-04	14.60	2	11.50	7
03-03	8.10	2	11.60	7
03-02	26.00	1	23.00	6
03-01	48.40	EXIST	47.20	EXIST

LEGEND

ITEM	EXISTING	AS-BUILT
SANITARY MANHOLE	○	●
STORM MANHOLE	⊘	■
SANITARY SEWER		
STORM SEWER		
CATCH BASIN	⊘	■
SLUICE BOX	▥	
CULVERT		
WATERMAIN		
GATE VALVE	⊢⊣	⊢●⊣
HYDRANT	⊢╋⊣	⊢●⊣
TEE	⊢┬⊣	⊢●⊣
BEND	⊢⌒	⊢●⊣
END CAP	⊢)	⊢●⊣
CURB STOP	⊗	●
UTILITY POLE	● POLE	
GUY WIRE	→	
LIGHT STANDARD	☼	
OVERHEAD UTILITY LINE	—O/H—	
UNDERGROUND UTILITY	—U/G—	
FENCE	—X—	
TREE LINE		
EDGE OF BANK		
MARSH	⁂	
GROUND ELEVATION	65.23	
SURVEY MARKER	⊙	
N.B. GRID MONUMENT	△	
SIGN	▮	
CURB & GUTTER		

NOTES:

1. ALL ELEVATIONS ARE IN REFERENCE TO GEODETIC DATUM AND REFERRED TO THE EXTREME TOP OF FIRE HYDRANT No. 1853 ELEV.: 64.20m.

2. FINISH CENTERLINE (℄) GRADE IS THE FUTURE TOP OF ASPHALT, THEREFORE THE CRUSHED ROCK GRADE IS 100mm LOWER THAN FINISH CENTERLINE GRADE.

3. ALL MATERIALS AND CONSTRUCTION METHODS IS IN ACCORDANCE WITH THE CITY OF MONCTON STANDARD MUNICIPAL SPECIFICATIONS.

INGENIERIE LTEE.
J. R. DAIGLE ENGINEERING LTD.

PROJECT TITLE:
MAGNETIC HILL ESTATES SUBDIVISION
UNIT No. 8
ROADWAYS, WATER & SEWER SERVICES

DRAWING TITLE:
SERVICES AS-BUILT

REGISTERED PROFESSIONAL ENGINEER Province of New Brunswick #3239 M. J. Babineau Licensed 2005-06-06 DATE Province du Nouveau-Brunswick INGÉNIEUR ENREGISTRÉ

DESIGNED BY:	CHECKED BY:
M.B.	J.R.D.
DRAWN BY:	CHECKED BY:
A.J.L.	J.R.D.
DATE:	SCALE:
JULY, 2005	HORIZ-1:500
DATE ISSUED:	
REVISION: 0	DRAWING No.: ME-1-AB-3 of 3

MAGNETIC HILL ESTATES SUBDIVISION
UNIT 8
ROADWAYS, WATER & SEWER SERVICES
LOT SERVICING
AUGUSTA TERR., CROWBUSH CRES., BELFRY ST.
J.R. DAIGLE ENGINEERING LTD

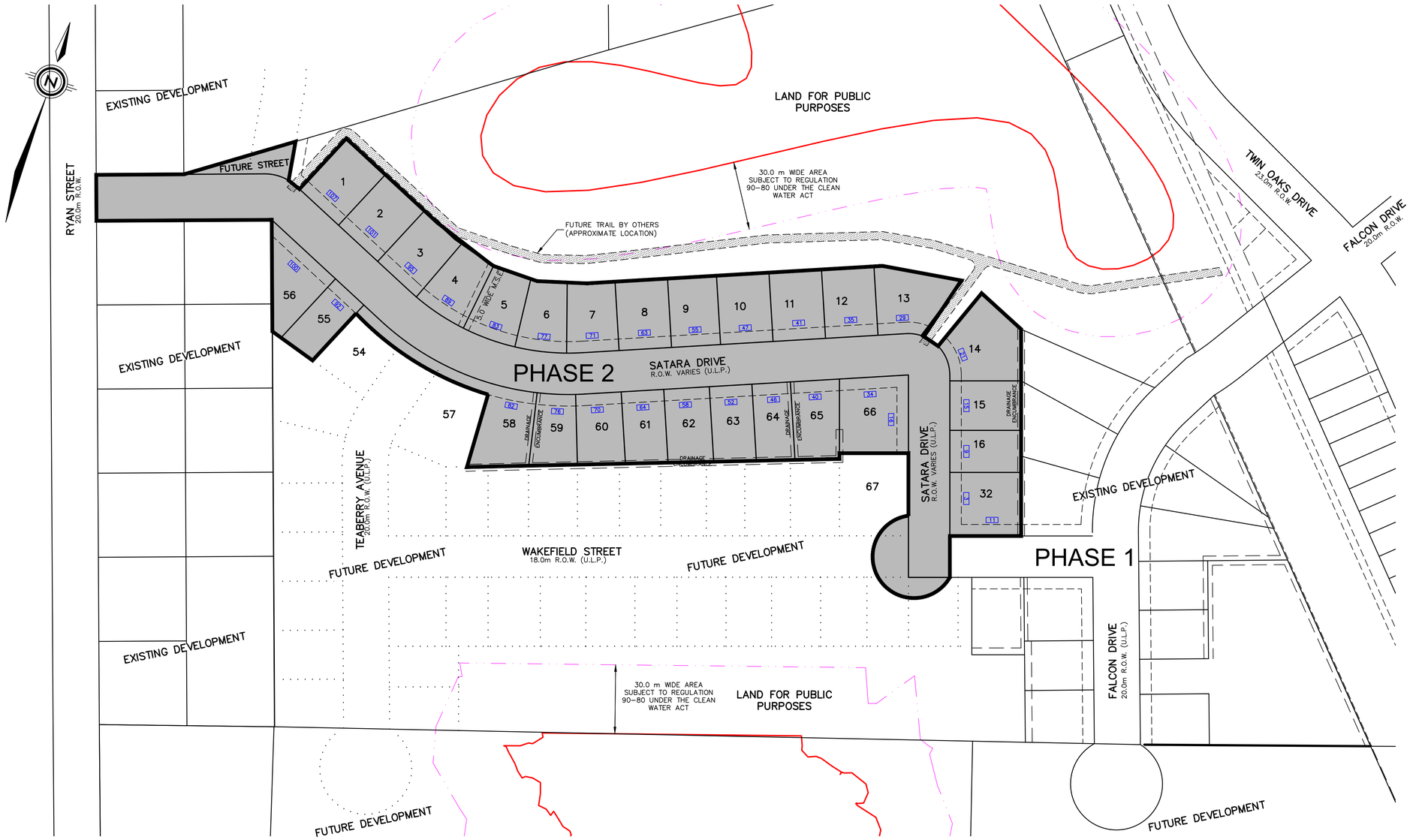
C:\MAGNETIC HILL\UNIT8\ABSBUILT JULY, 2005

4 OF 4

03-15d

LIBERTY HILL ESTATES

UNIT 5, PHASE 2
MONCTON, NEW BRUNSWICK



RECORD DRAWING LIST

SHEET 1 - RECORD DRAWING COVER SHEET
SHEET 2 - RECORD DRAWING PLAN AND PROFILE - SATARA DRIVE - 3+000 TO 3+230
SHEET 3 - RECORD DRAWING PLAN AND PROFILE - SATARA DRIVE - 3+230 TO 3+510
SHEET 4 - RECORD DRAWING PLAN AND PROFILE - TEABERRY AVENUE - 2+000 TO 2+040
PLAN AND PROFILE - WAKEFIELD DRIVE - 1+220 TO 1+290
SHEET 5 - RECORD DRAWING NOTES & DETAILS

CLIENT: CVR HOME IMPROVEMENTS
46 DIAMOND HEAD COURT #113
MONCTON, NB E1G 5S3
(506)-854-4320 EXT. 101

UNDEGROUND WORKS:

CONTRACTOR: QUALITY EXCAVATING
1084 ROUTE 535
COCAGNE, NB E1H 2K2
(506) 852-1048

INSPECTOR: ARTHUR KENNY AND RICHARD TRACY
FOREMAN: LUC MAILLET
CONSTRUCTION PERIOD :
AUGUST 9, 2017 TO NOVEMBER 21, 2017

ABOVE GROUND WORKS:

CURB AND SIDEWALK
CONTRACTOR: BASTECH ENTERPRISES INC.
341 COLLISHAW ST
MONCTON NB E1C 9R2
(506) 855-3434

INSPECTOR: ARTHUR KENNY
FOREMAN: THIERRY BASQUE

CONSTRUCTION PERIOD :
JUNE 18, 2018 TO JULY 26, 2018

ASPHALT
CONTRACTOR: MILLER PAVING
181 MACALEESE LANE
MONCTON, NB
(506) 857-2805

INSPECTOR: ARTHUR KENNY
FOREMAN: MARK MCKAY

CONSTRUCTION PERIOD :
OCTOBER 10, 2018 TO OCTOBER 17, 2018

DATE OF PROVISIONAL INSPECTION: NOVEMBER 29, 2017
PRESENT AT INSPECTION:
JEFF SCOTT (CITY OF MONCTON)
ANICK MACDONALD (CITY OF MONCTON)
JEFF MACDONALD (CITY OF MONCTON)
ARTHUR KENNY (WSP)
LUC MAILLET (QUALITY EXCAVATING)

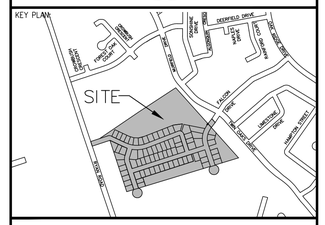
DATE OF ABOVE GROUND INSPECTION: OCTOBER 30, 2018
PRESENT AT INSPECTION:
JEFF SCOTT (CITY OF MONCTON)
ANICK MACDONALD (CITY OF MONCTON)
JEFF MACDONALD (CITY OF MONCTON)
MATT SEELY (WSP)
ROBERT LEBLANC (QUALITY EXCAVATING)

WSP Canada Inc.
1070 St. George Boulevard, Suite 160
Moncton, New Brunswick, Canada E1E 4K7
T 506-857-1675 F 506-857-1679 www.wsp.com

SEAL:

REGISTERED PROFESSIONAL ENGINEER
Province of New Brunswick
#M7212
Denis P. LeBlanc
Signature
January 7, 2019
Date
Province du Nouveau-Brunswick
INGÉNIEUR IMMATRICULÉ

KEY PLAN



REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
6	2019/01/07	FINAL ABOVE GROUND RECORD DRAWING
5	2018/12/21	ABOVE GROUND RECORD DRAWING FOR REVIEW
4	2018/04/02	FINAL BELOW GROUND RECORD DRAWINGS
3	2018/03/26	BELOW GROUND RECORD DRAWINGS FOR REVIEW
2	2017/08/14	ISSUED FOR CONSTRUCTION
1	2017/07/21	REVISED AS PER CITY COMMENTS
0	2017/05/25	ISSUED FOR REVIEW

PROJECT NO: MN10312
DATE: (YYYY/MM/DD) 2019/01/07
ORIGINAL SCALE: HORIZONTAL: 1:1000 VERTICAL: N/A
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
DESIGNED BY: L.ROY
DRAWN BY: C.LANDRY/D.BOUCHER
CHECKED BY: D.LEBLANC
25mm
SCALE: 1:1000 METRIC
20 16 12 8 4 0 20 40 60

CLIENT:
CVR HOME IMPROVEMENTS
CLIENT REF. #:

PROJECT:
LIBERTY HILL ESTATES
UNIT 5 PHASE 2
MONCTON, NEW BRUNSWICK

TITLE:
RECORD DRAWING
COVER SHEET

SHEET NUMBER: 1
SHEET #: 1 OF 5

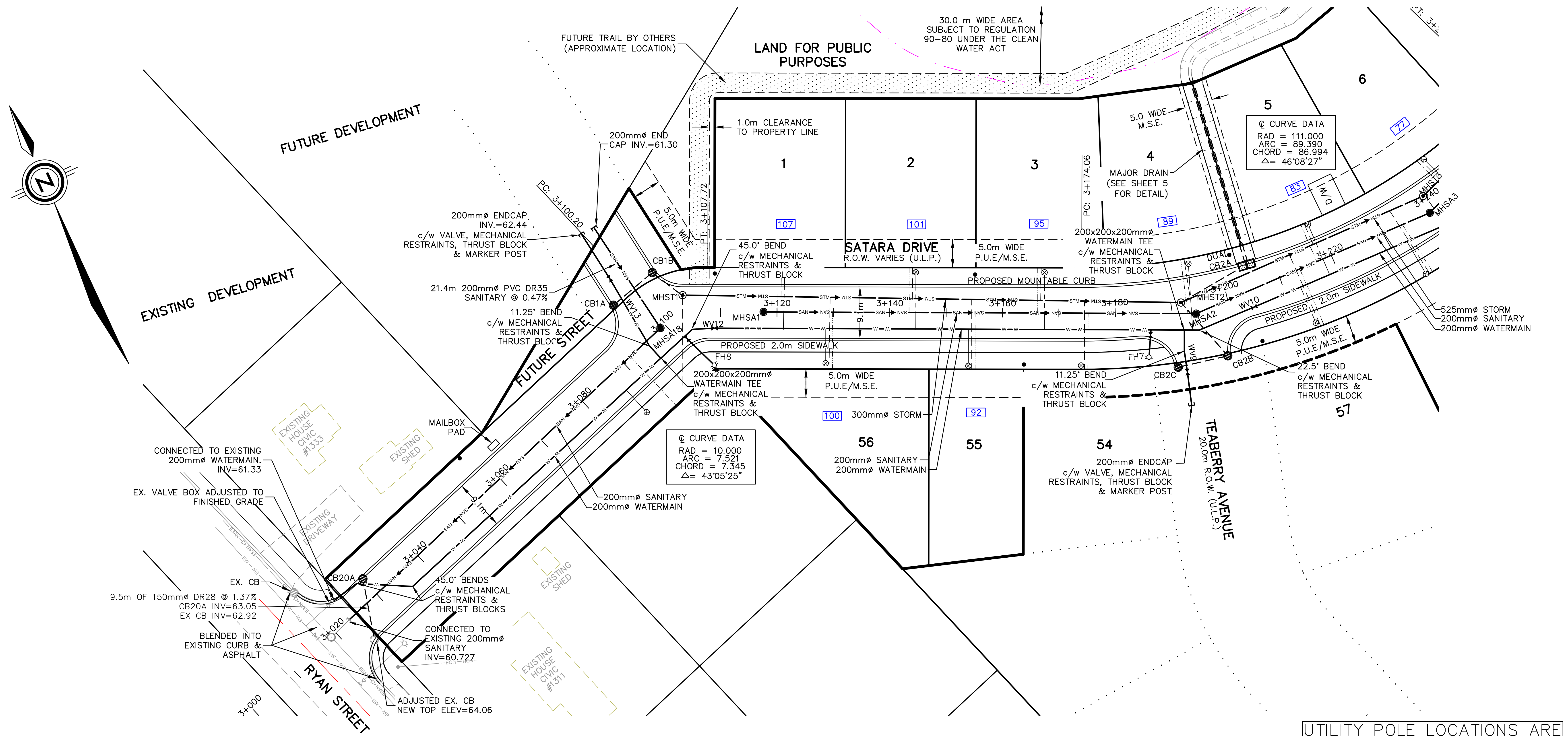
ISSUE: FINAL ABOVE GROUND RECORD DRAWING
DATE OF: 2019/01/07
REV #: 6

XREFS: K:\MONCTON\2010\10312\DWG\ENG\SOURCE DRAWINGS\PHASE1\10312-BASEPLAN-PHASE2.DWG K:\MONCTON\2010\10312\DWG\ENG\SOURCE DRAWINGS\PHASE1\10312-KEYPLAN-PHASE2.DWG
GENWAR REF. NO.: ---
K:\MONCTON\2010\10312\DWG\ENG\PRODUCTION DRAWINGS\PHASE II\AS-BUILT\10312-HSP2-COVER-02.DWG PRINTED: 10:26 AM 2019/01/07 BY: CHARLES.LANDRY

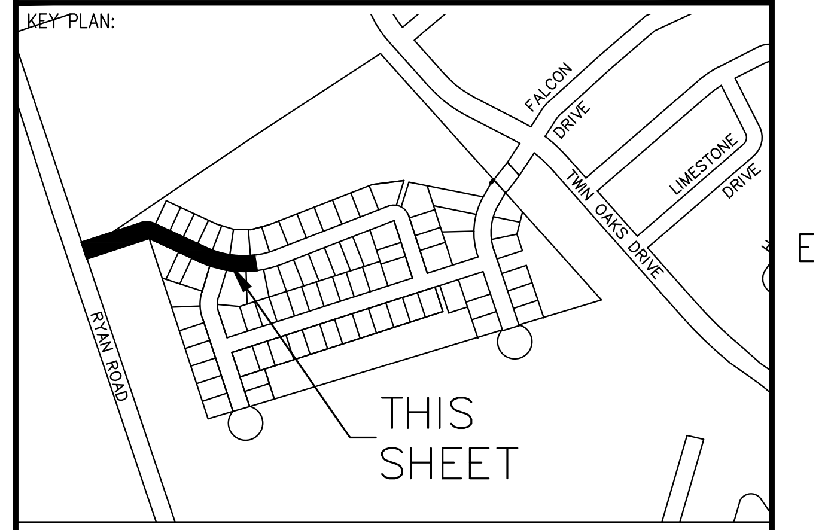
wsp
WSP Canada Inc.
1070 St. George Boulevard, Suite 160
Moncton, New Brunswick, Canada E1E 4K7
T 506-857-1675 F 506-857-1679 www.wsp.com

SEAL:

REGISTERED PROFESSIONAL ENGINEER
#M7212
Denis P. LeBlanc
January 7, 2019
Date



KEY PLAN:



LEGEND:	PROPOSED	EXISTING
EDGE OF PAVEMENT	———	— — —
LOTLINE	———	—— ——
WATERMAIN & GATE VALVE	—W—W—⋈—	—EW—EW—⋈—
SANITARY PIPE & MANHOLE	—SAN→SAN—●	—ESAN▷ESAN—○
STORM PIPE & MANHOLE	—STM→STM—◉	—ESTM▷ESTM—◎
UTILITY LINES & POLE	—OH—OH—●	—EOH—EOH—●

STREET BOUNDARY	———	SANITARY LATERAL	—⋯—⋯—
PROPERTY BOUNDARY	━━━	STORM LATERAL	— — —
EASEMENT	— — —	WATER LATERAL	⊗— — —
CURB & DRIVEWAY CUT	▥	CATCH BASIN LEAD	— — —

CATCH BASIN	▦ ●	ENDCAP	]	CULVERT	▨
FIRE HYDRANT	●→◂	LIGHT STANDARD	●—☼	HEADWALL	⏢
STREET TREE	❀	PHONE PEDESTAL	∘	SIDEWALK	⁘
UTILITY POLE	●	URD BOX	▭	FENCE	—x—

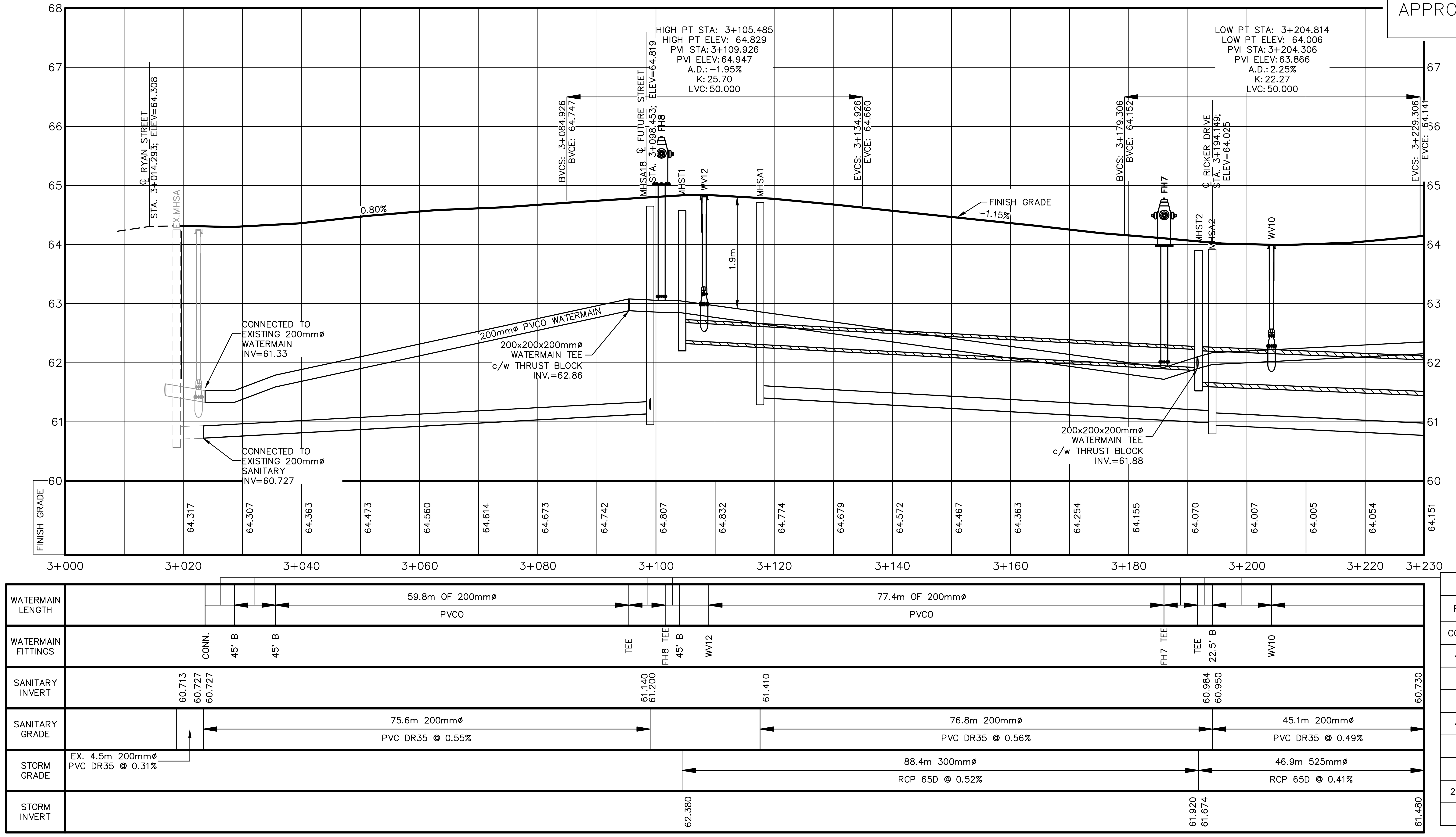
DISCLAIMER:
COPYRIGHT:

SEE SHEET 5 FOR CONSTRUCTION NOTES AND DETAILS.

REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
6	2019/01/07	FINAL ABOVE GROUND RECORD DRAWING
5	2018/12/21	ABOVE GROUND RECORD DRAWING FOR REVIEW
4	2018/04/02	FINAL BELOW GROUND RECORD DRAWINGS
3	2018/03/26	BELOW GROUND RECORD DRAWINGS FOR REVIEW
2	2017/08/14	ISSUED FOR CONSTRUCTION
1	2017/07/21	REVISED AS PER CITY COMMENTS
0	2017/05/25	ISSUED FOR REVIEW

UTILITY POLE LOCATIONS ARE APPROXIMATE AS PROVIDED BY NB POWER.



WATERMAIN LENGTH BETWEEN FITTINGS		
FITTING A	FITTING B	DISTANCE, SIZE & MATERIAL
CONNECTION	45° BEND	5.0m OF 200mmø PVCO
45° BEND	45° BEND	9.9m OF 200mmø PVCO
TEE	FH8 TEE	5.8m OF 200mmø PVCO
FH8 TEE	45° BEND	1.8m OF 200mmø PVCO
45° BEND	WV12	4.0m OF 200mmø PVCO
FH7 TEE	TEE	5.9m OF 200mmø PVCO
TEE	22.5° BEND	2.7m OF 200mmø PVCO
22.5° BEND	WV10	10.5m OF 200mmø PVCO
WV10	22.5 BEND	35.8m OF 200mmø PVCO

PROJECT NO:
MN10312

DATE: (YYYY/MM/DD)
2019/01/07

ORIGINAL SCALE:
HORIZONTAL: 1:500 VERTICAL: 1:50

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DESIGNED BY:
L.ROY

DRAWN BY:
C.LANDRY/D.BOUCHER

CHECKED BY:
D.LEBLANC

SCALE: 1:750 METRIC
15 10 5 0 15 30 45

CLIENT:

CVR HOME IMPROVEMENTS

CLIENT REF. #:

PROJECT:

LIBERTY HILL ESTATES
UNIT 5 PHASE 2

MONCTON, NEW BRUNSWICK

TITLE:

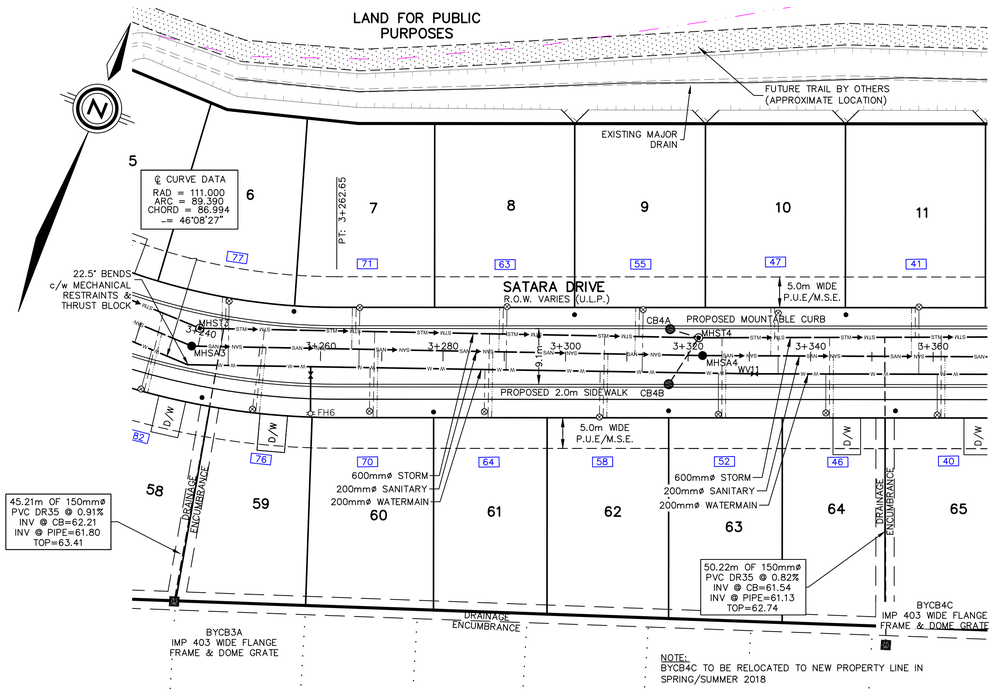
RECORD DRAWING PLAN AND PROFILE
SATARA DRIVE
3+000 TO 3+230

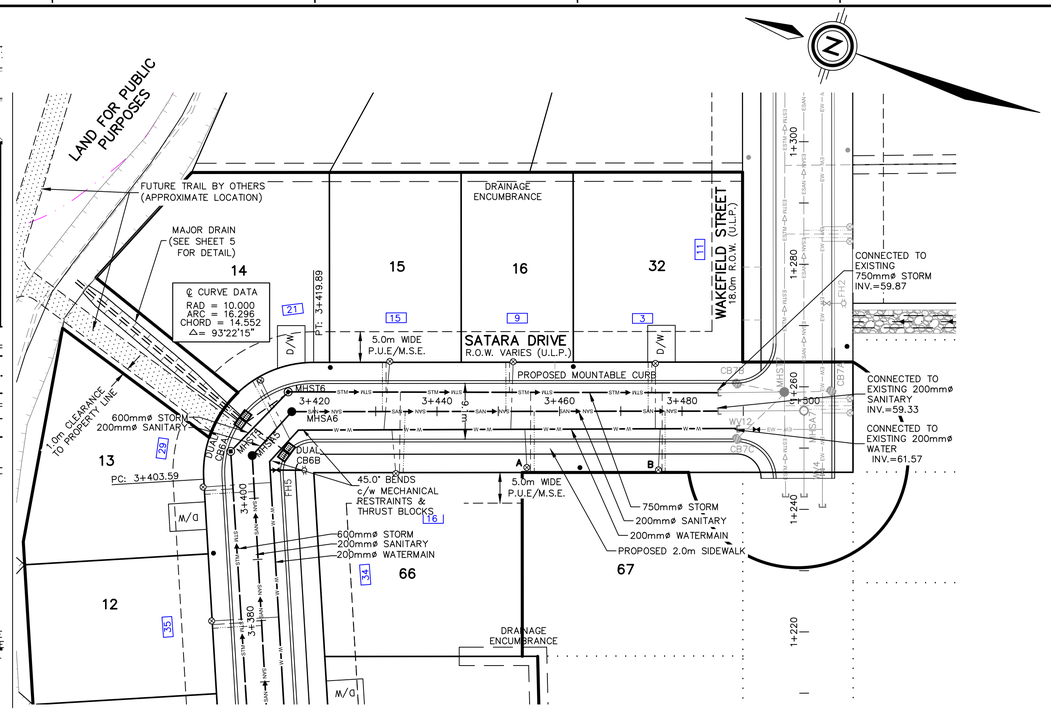
SHEET NUMBER:
2
SHEET #: 2 OF 5

ISSUE:
FINAL ABOVE GROUND RECORD DRAWING
DATE OF: 2019/01/07

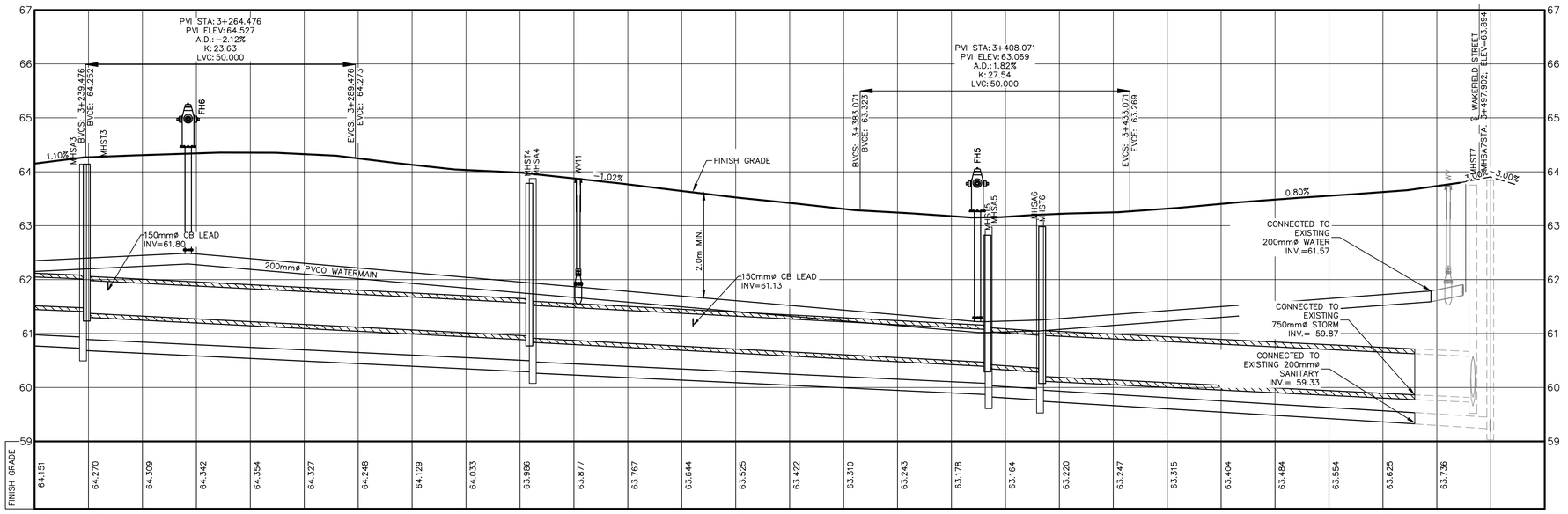
REV #
6

PRINTED: 10:27 AM 2019/01/07 BY: CHARLES.LANDRY
SATARA-1
K:\MONCTON\2010\10312\DWG\ENG\PRODUCTION DRAWINGS\PHASE II\AS-BUILT\10312-U5P2-P&P-021.DWG
GENIVAR REF. NO.: ----
XREFS: (DESEL evaluation failed)





UTILITY POLE LOCATIONS ARE APPROXIMATE AS PROVIDED BY NB POWER.



WATERMAIN LENGTH	20.1m OF 200mmø PVCO	72.4m OF 200mmø PVCO	73.6m OF 200mmø PVCO	71.5m OF 200mmø PVCO
WATERMAIN FITTINGS	22.5° B, FH6 TEE	WV11	FH5 TEE, 45° B	45° B, CONN.
SANITARY INVERT	60.950; 60.730 / 60.690	60.290 / 60.270	59.870 / 59.830; 59.770 / 59.750	59.330 / 59.330; 59.240 / 59.210 / 59.180
SANITARY GRADE	83.4m 200mmø PVC DR35 @ 0.48%	84.6m 200mmø PVC DR35 @ 0.47%	69.6m 200mmø PVC DR35 @ 0.60%	EX. 14.0m 200mmø PVC DR35 @ 0.64%
STORM GRADE	81.4m 600mmø RCP 65D @ 0.52%	86.1m 600mmø RCP 65D @ 0.52%	70.2m 750mmø RCP 65D @ 0.48%	EX. 10.8m 750mmø RCP 65D @ 0.46%
STORM INVERT	61.674; 61.480 / 61.381; 46.9m 525mmø RCP 65D @ 0.41%	60.960 / 60.920	60.470 / 60.430; 60.360 / 60.210; 13.5m 600mmø RCP 65D @ 0.52%	59.870 / 59.870; 59.820 / 59.830 / 59.670

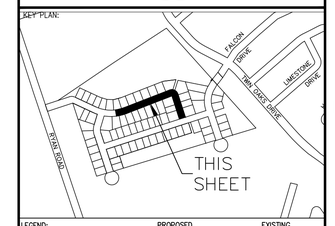
WATERMAIN LENGTH BETWEEN FITTINGS		
FITTING A	FITTING B	DISTANCE, SIZE & MATERIAL
WV10	22.5° BEND	35.8m OF 200mmø PVCO
FH5 TEE	45° BEND	1.4m OF 200mmø PVCO
45° BEND	45° BEND	7.0m OF 200mmø PVCO

WSP Canada Inc.
1070 St. George Boulevard, Suite 160
Moncton, New Brunswick, Canada E1E 4K7
T 506-857-1675 F 506-857-1679 www.wsp.com

SEAL:

REGISTERED PROFESSIONAL ENGINEER
Province of New Brunswick
#M7212
Denis P. LeBlanc
Signature
January 7, 2019
Date
Province du Nouveau-Brunswick
INGÉNIEUR IMMATRICULÉ

KEY PLAN:



LEGEND:

	PROPOSED	EXISTING
EDGE OF PAVEMENT		
LOTLINE		
WATERMAIN & GATE VALVE	W — M — W	EW — M3 — EW
SANITARY PIPE & MANHOLE	SAN → MH3	ESAN → MH3
STORM PIPE & MANHOLE	STM → MH3	ESTM → MH3
UTILITY LINES & POLE	GH — HG — GH	EGH — HG3 — EGH
STREET BOUNDARY		
PROPERTY BOUNDARY		
EASEMENT		
CURB & DRIVEWAY CUT		
CATCH BASIN		ENDCAP, CULVERT
FIRE HYDRANT	LIGHT STANDARD	HEADWALL
STREET TREE	PHONE PEDESTAL	SIDEWALK
UTILITY POLE	URD BOX	FENCE

SANITARY LATERAL
STORM LATERAL
WATER LATERAL
CATCH BASIN LEAD

REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
6	2019/01/07	FINAL ABOVE GROUND RECORD DRAWING
5	2018/12/21	ABOVE GROUND RECORD DRAWING FOR REVIEW
4	2018/04/02	FINAL BELOW GROUND RECORD DRAWINGS
3	2018/03/26	BELOW GROUND RECORD DRAWINGS FOR REVIEW
2	2017/08/14	ISSUED FOR CONSTRUCTION
1	2017/07/21	REVISED AS PER CITY COMMENTS
0	2017/05/25	ISSUED FOR REVIEW

PROJECT NO: MN10312	DATE: (YYYY/MM/DD) 2019/01/07
ORIGINAL SCALE: HORIZONTAL: 1:500 VERTICAL: 1:50	IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
DESIGNED BY: L.ROY	25mm
DRAWN BY: C.LANDRY/D.BOUCHER	
CHECKED BY: D.LEBLANC	

SCALE: 1:750 METRIC
15 10 5 0 15 30 45

CLIENT:

CVR HOME IMPROVEMENTS

CLIENT REF. #:

PROJECT:

LIBERTY HILL ESTATES
UNIT 5 PHASE 2
MONCTON, NEW BRUNSWICK

TITLE:

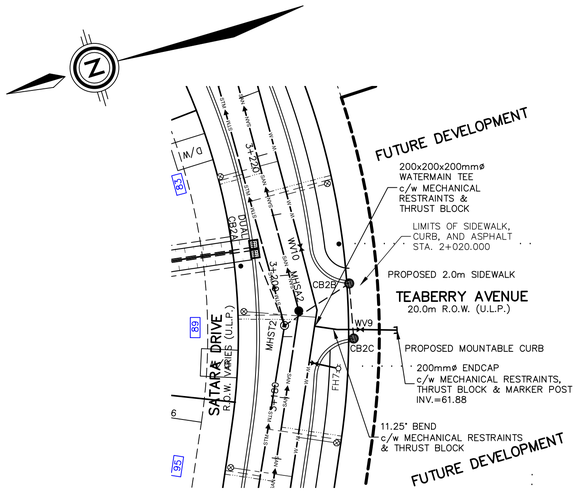
RECORD DRAWING PLAN AND PROFILE
SATARA DRIVE
3+230 TO 3+510

SHEET NUMBER: 3
SHEET #: 3 OF 5

ISSUE: FINAL ABOVE GROUND RECORD DRAWING
DATE OF: 2019/01/07
REV #: 6

XREFS: (NIGEL evaluation folder)

PRINTED: 10:27 AM 2019/01/07 BY: CHARLES.LANDRY
K:\MONCTON\2010\10312\DWG\ENG\PRODUCTION DRAWINGS\PHASE II\AS-BUILT\10312-USP2-PAP-021.DWG SATARA-2
GENWAR REF. NO.: ----


FUTURE DEVELOPMENT
200x200x200mmø WATERMAIN TEE c/w MECHANICAL RESTRAINTS & THRUST BLOCK
LIMITS OF SIDEWALK, CURB, AND ASPHALT STA. 2+020.000
PROPOSED 2.0m SIDEWALK
TEABERRY AVENUE
20.0m R.O.W. (U.L.P.)
SATARA DRIVE
R.O.W. VARIES (U.L.P.)
PROPOSED MOUNTABLE CURB
200mmø ENDCAP c/w MECHANICAL RESTRAINTS, THRUST BLOCK & MARKER POST INV.=61.88
11.25° BEND c/w MECHANICAL RESTRAINTS & THRUST BLOCK
FUTURE DEVELOPMENT
CB2A
CB2B
CB2C
WV10
WV9
WV8
MHST2
MHST1
FH1
FH2
3+220
3+260
3+280
3+300
3+320
3+340
3+360
3+380
3+400
3+420
3+440
3+460
3+480
3+500
3+520
3+540
3+560
3+580
3+600
3+620
3+640
3+660
3+680
3+700
3+720
3+740
3+760
3+780
3+800
3+820
3+840
3+860
3+880
3+900
3+920
3+940
3+960
3+980
4+000
4+020
4+040

CONSTRUCTION NOTES

1. ALL WORK PERFORMED IN ACCORDANCE WITH THE CITY OF MONCTON ENGINEERING AND ENVIRONMENTAL SERVICES DEPARTMENT STANDARD MUNICIPAL SPECIFICATIONS, 2013 EDITION.

2. ALL WORK PERFORMED IN ACCORDANCE WITH THE NEW BRUNSWICK DEPARTMENT OF THE ENVIRONMENT AND LOCAL GOVERNMENT.

3. ALL ELEVATIONS ARE APPROXIMATELY GEODETIC BASED ON NBCM 28155, N=7456492.126, E=2628800.997 WITH A PUBLISHED ELEVATION OF 47.212.

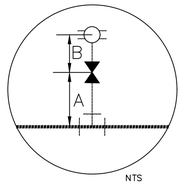
SEE MONCTON SUBDIVISION DEVELOPMENT PROCEDURES, STANDARDS AND GUIDELINES (LATEST EDITION) FOR TYPICAL ROAD CROSS SECTION.

MATERIALS

STORM SEWER
- MAINS: 750mmø, 600mmø, 525mmø & 300mmø CONCRETE RCP 65D BY STRESCON
- LATERALS: 150mmø PVC DR28 (WHITE) BY IPEX
- CONNECTORS: INSERT-A-TEE
- CB LEADS: 150mmø PVC DR28 (WHITE) BY IPEX
- MANHOLES: 1500mmø, 1200mmø & 1050mmø CONCRETE BY STRESCON
- CATCH BASINS: 1050mmø & 750mmø CONCRETE BY STRESCON
- PERFORATED DRAIN PIPE BY ARMTEC
- FITTINGS: 150mmø PVC DR35 LONG SWEEP 22.5° & 11.25° BENDS AND CAPS BY IPEX

SANITARY SEWER
- MAINS: 200mmø PVC DR35 (GREEN) BY IPEX
- LATERALS: 100mmø PVC DR35 (GREEN) BY IPEX
- MANHOLES: 1050mmø CONCRETE BY STRESCON
- CONNECTORS: 100mmø DR35 SADDLE BY IPEX
- FITTINGS: 100mmø PVC DR35 LONG SWEEP 45°, 22.5°, 11.25° BENDS AND CAPS BY IPEX

WATERMAIN
- MAINS: 200mmø PVCO BIONAX BY IPEX
- HYDRANTS: CLOW CANADA
- GATE VALVES: 200mmø & 150mmø BY CLOW CANADA
- VALVE BOXES: MUELLER MVB
- SERVICE BOX: CLOW
- FITTINGS: 200x200mm, 200x150mm TEE; 200mm-22.5°, 11.25° BENDS BY STAR PIPE PRODUCTS
- MAIN STOP: 19mm BALL TYPE BY MUELLER
- CURB STOP: 19mm BALL TYPE BY MUELLER
- WATER LATERALS: 19mm Q-LINE BY IPEX
- SADDLES: CAMBRIDGE BRASS
- RESTRAINTS: MECHANICAL RESTRAINTS BY STAR PIPE PRODUCTS



NTS

FIRE HYDRANT CONNECTIONS

FH	DIM"A"	DIM"B"	TOP ELEV.
5	0.99	4.60	64.08
6	1.37	6.25	65.27
7	0.90	3.96	64.79
8	0.57	6.76	65.84

MANHOLE SCHEDULE

MANHOLE LABEL	MANHOLE TOP ELEVATION	MANHOLE DIAMETER
MHSA1	64.80	1050mm
MHSA2	63.98	1050mm
MHSA3	64.22	1050mm
MHSA4	63.94	1050mm
MHSA5	63.13	1050mm
MHSA6	63.18	1050mm
MHSA18	64.78	1050mm
MHST1	64.71	1050mm
MHST2	64.02	1050mm
MHST3	64.20	1200mm
MHST4	63.87	1200mm
MHST5	63.08	1200mm
MHST6	63.10	1500mm

CATCHBASIN SCHEDULE

CATCHBASIN LABEL	COVER TYPE	CATCHBASIN LEAD TO	FINISHED TOP OF CATCHBASIN	LEAD DIAMETER (mm)	ICD FLOW (l/s)	INLET CONTROL DEVICE	DISTANCE TO MANHOLE (m)
CB1A	W411 FRAME & GRATE	CB1B	64.52	150	N/A	N/A*	8.99
CB1B	W411 FRAME & GRATE	MHST1	64.59	150	N/A	N/A*	6.26
DUAL GRATE CB2A	S401 DOUBLE FRAME & GRATE	MHST2	63.80	150	N/A	N/A*	13.51
CB2B	W411 FRAME & GRATE	MHST2	63.81	150	N/A	N/A*	12.60
CB2C	W411 FRAME & GRATE	CB2B	63.83	150	N/A	N/A*	9.00
BYCB3A	IMP 403 WIDE FLANGE FRAME & DOME GRATE	PIPE	63.41	150	N/A	N/A*	45.21
CB4A	W411 FRAME & GRATE	MHST4	63.83	150	28.99	114.3mm (4.5")	4.87
CB4B	W411 FRAME & GRATE	MHST4	63.81	150	28.99	114.3mm (4.5")	9.02
BYCB4C	IMP 403 WIDE FLANGE FRAME & DOME GRATE	PIPE	63.74	150	28.99	114.3mm (4.5")	50.22
DUAL GRATE CB6A	S401 DOUBLE FRAME & GRATE	MHST6	63.02	150	N/A	N/A*	8.32
DUAL GRATE CB6B	S401 DOUBLE FRAME & GRATE	DUAL GRATE CB6A	63.00	150	N/A	N/A*	7.47
CB20A	W411 FRAME & GRATE	EXCB	64.13	150	28.99	114.3mm (4.5")	9.60
EXCB7A	W411 FRAME & GRATE	MHST7	63.67	150	28.99	114.3mm (4.5")	7.54
EXCB7B	W411 FRAME & GRATE	MHST7	63.56	150	28.99	114.3mm (4.5")	8.13
EXCB7C	W411 FRAME & GRATE	CB7B	63.50	150	N/A	N/A*	10.95

NOTE:
TOP ELEVATIONS OF BACKYARD CATCH BASINS WITH DOME GRATES REFER TO LOWEST ELEVATION AT WHICH WATER CAN ENTER THE GRATE

*CATCHBASINS DO NOT REQUIRE ICD SINCE 5 YEAR FLOW REQUIRES 150mmø LEAD

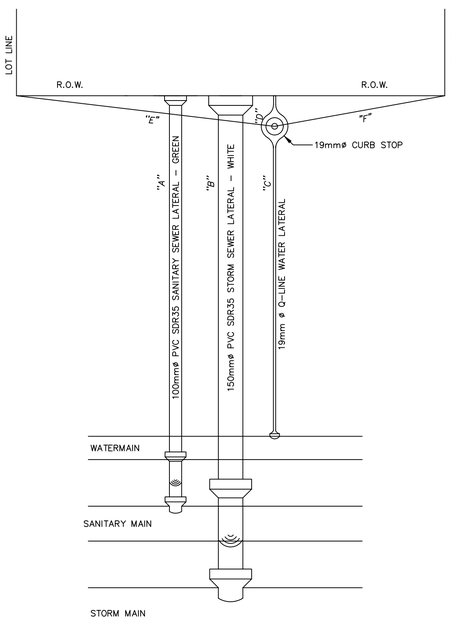
ROADBED MATERIAL THICKNESS

MATERIAL	WAKEFIELD STREET	SATARA DRIVE	RICKER DRIVE
ASPHALT SEAL N.B.D.O.T. TYPE "D"	40mm	40mm	40mm
ASPHALT SEAL N.B.D.O.T. TYPE "B"	60mm	60mm	60mm
CRUSHED STONE 31.5mm MINUS	200mm	200mm	200mm
CRUSHED STONE 75mm MINUS	300mm	300mm	300mm
CRUSHED STONE UNDER CURB	335mm	335mm	335mm
R.O.W. WIDTH	18.0m	VARIES	20.0m
ALIGNMENT	OFFSET	OFFSET	OFFSET
CURB TYPE	MOUNTABLE	MOUNTABLE	MOUNTABLE
SIDEWALK	2.0m WIDE INTERGRATED	2.0m WIDE INTERGRATED	2.0m WIDE INTERGRATED

SEE DRAWING NO. S/D 2A SHOWN IN MONCTON SUBDIVISION DEVELOPMENT PROCEDURES, STANDARDS AND GUIDELINES (LATEST EDITION) FOR ROAD CROSS SECTION.

SINGLE UNIT SERVICE CONNECTION CONFIGURATION

N.T.S.

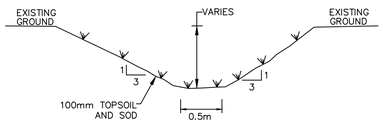


SERVICE LATERAL SCHEDULE

SANITARY LATERALS			STORM LATERALS			WATER LATERALS					
LOT NUMBER	DISTANCE FROM MAINLINE TO PROPERTY LINE (ENDCAP) "A"	INVERT AT PROPERTY LINE (ENDCAP)	LOT NUMBER	DISTANCE FROM MAINLINE TO PROPERTY LINE (ENDCAP) "B"	INVERT AT PROPERTY LINE (ENDCAP)	LOT NUMBER	DISTANCE FROM MAINLINE TO CURBSTOP "C"	DISTANCE FROM CURBSTOP TO PROPERTY LINE "D"	INVERT AT PROPERTY LINE	DISTANCE FROM CURBSTOP TO PROPERTY LINE "E"	"F"
1	7.90	62.40	1	5.16	62.40	1	10.37	0.63	62.81	12.44	10.76
2	7.96	62.41	2	5.48	62.41	2	10.18	0.82	62.63	12.54	10.68
3	8.01	62.36	3	5.79	62.36	3	10.20	0.80	62.37	12.21	10.69
4	9.70	62.26	4	7.12	62.26	4	11.80	0.97	62.15	14.87	9.91
5	7.11	62.15	5	4.04	62.03	5	9.71	0.40	62.15	12.43	11.50
6	8.15	61.95	6	5.13	61.95	6	10.48	0.52	62.34	12.08	10.70
7	6.81	61.75	7	3.90	61.75	7	9.78	0.04	62.44	10.65	12.21
8	7.25	61.68	8	4.33	61.68	8	10.31	−0.13	62.33	11.82	11.04
9	7.65	61.74	9	4.74	61.74	9	10.19	0.35	62.12	11.19	10.16
10	7.88	61.66	10	4.89	61.63	10	9.93	0.89	61.90	11.93	11.00
11	7.96	61.24	11	4.82	61.24	11	10.96	−0.12	61.66	10.96	10.86
12	8.04	61.10	12	4.75	61.10	12	10.96	−0.08	61.43	11.89	10.97
13	8.12	60.93	13	4.68	60.98	13	11.09	−0.18	61.29	10.93	8.14
14	8.71	61.00	14	5.56	61.00	14	10.77	0.61	61.15	4.21	11.61
15	8.04	61.29	15	4.86	61.29	15	11.20	−0.16	61.36	9.84	11.66
16	8.02	61.01	16	4.91	61.01	16	11.04	−0.08	61.51	8.48	9.81
32	8.01	60.96	32	4.98	60.96	32	10.67	0.21	61.80	13.42	14.23
54	9.96	62.35	54	12.11	62.35	54	6.32	0.68	62.32	12.64	10.24
55	10.01	62.42	55	12.38	62.42	55	6.42	0.58	62.54	9.80	7.01
56	10.08	62.53	56	12.72	62.53	56	5.98	1.01	62.79	18.35	19.48
57	10.80	62.21	57	13.80	62.21	57	6.87	0.86	62.17	14.23	10.14
58	9.94	62.01	58	13.20	62.01	58	6.66	0.30	62.21	12.96	10.36
59	10.83	61.85	59	13.71	61.85	59	7.14	0.57	62.46	9.83	6.96
60	11.11	61.83	60	14.05	61.83	60	7.11	1.05	62.49	10.53	9.42
61	10.78	61.94	61	13.70	61.94	61	6.88	0.99	62.39	10.30	8.34
62	10.44	61.65	62	13.36	61.65	62	7.46	0.12	62.21	11.31	8.54
63	10.15	61.65	63	13.08	61.65	63	6.69	0.58	62.02	10.46	8.12
64	10.08	61.45	64	13.13	61.45	64	6.35	0.81	61.74	9.71	7.15
65	10.02	61.21	65	13.20	61.21	65	6.65	0.51	61.64	12.89	8.51
66	9.97	61.14	66	13.14	61.14	66	7.17	−0.15	61.51	20.62	13.40
67A	10.01	60.80	65	13.08	60.80	65	6.24	0.82	61.56	35.25	1.11
67B	10.00	60.98	66	13.01	60.98	66	6.71	0.43	61.82	13.77	22.24
1311 RYAN	11.98	62.45	1311 RYAN	18.56	62.45	1311 RYAN	5.35	2.75	62.83	14.51	24.02

MAJOR DRAIN DETAIL

N.T.S.

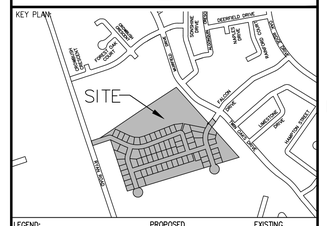


WSP Canada Inc.
1070 St. George Boulevard, Suite 160
Moncton, New Brunswick, Canada E1E 4K7
T 506-857-1675 F 506-857-1679 www.wsp.com

SEAL:

REGISTERED PROFESSIONAL ENGINEER Province of New Brunswick #M7212 Denis P. LeBlanc Signature January 7, 2019 Date Province du Nouveau-Brunswick INGÉNIEUR IMMATRICULÉ

KEY PLAN



LEGEND:	PROPOSED	EXISTING
EDGE OF PAVEMENT		
LOTLINE		
WATERMAIN & GATE VALVE	W — M	EW — M3
SANITARY PIPE & MANHOLE	SAN — MVE	ESAN — MVE3
STORM PIPE & MANHOLE	STM — MLS	ESTM — MLS3
UTILITY LINES & POLE	OH — HO	EOH — HO3
STREET BOUNDARY		SANITARY LATERAL
PROPERTY BOUNDARY		STORM LATERAL
EASEMENT		WATER LATERAL
CURB & DRIVEWAY CUT		CATCH BASIN LEAD
CATCH BASIN	ENDCAP	CULVERT
FIRE HYDRANT	LIGHT STANDARD	HEADWALL
STREET TREE	PHONE PEDESTAL	SIDEWALK
UTILITY POLE	URD BOX	FENCE

REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
6	2019/01/07	FINAL ABOVE GROUND RECORD DRAWING
5	2018/12/21	ABOVE GROUND RECORD DRAWING FOR REVIEW
4	2018/04/02	FINAL BELOW GROUND RECORD DRAWINGS
3	2018/03/26	BELOW GROUND RECORD DRAWINGS FOR REVIEW
2	2017/08/14	ISSUED FOR CONSTRUCTION
1	2017/07/21	REVISED AS PER CITY COMMENTS
0	2017/05/25	ISSUED FOR REVIEW

PROJECT NO: MN10312 — DATE: (YYYY/MM/DD) 2019/01/07
ORIGINAL SCALE: HORIZONTAL: N/A VERTICAL: N/A
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm
DESIGNED BY: L.ROY
DRAWN BY: C.LANDRY/D.BOUCHER
CHECKED BY: D.LEBLANC

CLIENT: CVR HOME IMPROVEMENTS
CLIENT REF. #:

PROJECT: LIBERTY HILL ESTATES UNIT 5 PHASE 2 MONCTON, NEW BRUNSWICK

TITLE: RECORD DRAWING NOTES & DETAILS

SHEET NUMBER: 5
SHEET #: 5 OF 5

ISSUE: FINAL ABOVE GROUND RECORD DRAWING — REV #: 6
DATE OF: 2019/01/07

XREFS: K:\MONCTON\2010\10312\DWG\ENG\SOURCE DRAWINGS\10312-ROAD_FEATURES.DWG - K:\MONCTON\2010\10312\DWG\ENG\SOURCE DRAWINGS\10312-KEYPLAN.DWG - K:\MONCTON\2010\10312\DWG\ENG\SOURCE DRAWINGS\10312-PHASE2.DWG

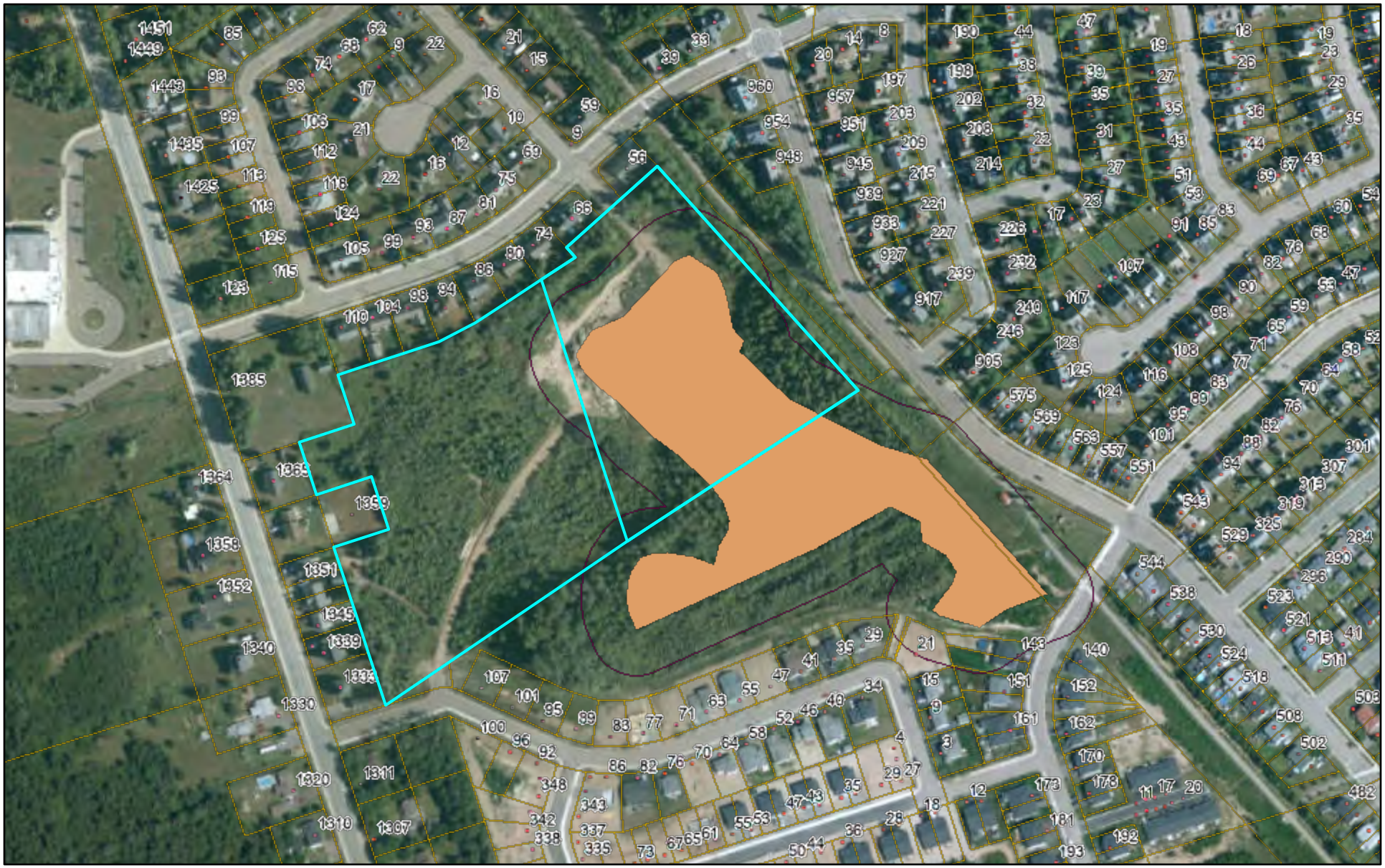
GENXAR REF. NO.: K:\MONCTON\2010\10312\DWG\ENG\PRODUCTION DRAWINGS\PHASE II\AS-BUILT\10312-USP2-NOTES-DETAILS-001.DWG — PRINTED: 10:27 AM 2019/01/07 — BY: CHARLES.LANDRY

APPENDIX C

Site Location Plan

hive ENGINEERING

21.03.162 - Site Location Plan



11/30/2021, 12:52:02 PM

Civic Addresses

parcels

2

Buffer 30m

Year of Photography

Large Scale / Grande échelle

1:3,571

0 0.03 0.06 0.12 mi

0 0.05 0.1 0.19 km

Department of Environment & Local Government/Ministère de

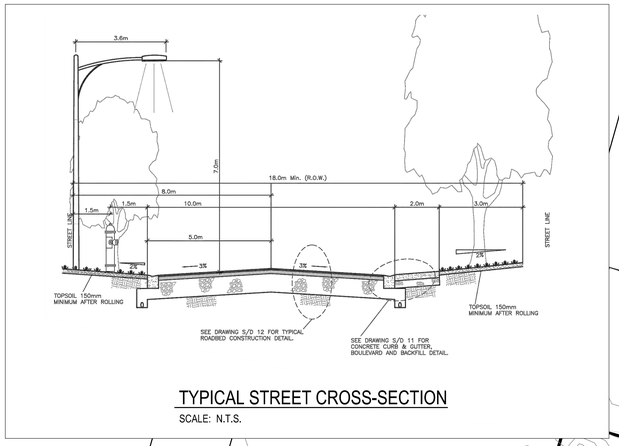
GeoNB

This map is a graphical representation which approximates the size, configuration and location of features. This map is not intended to be used for legal descriptions or to calculate exact dimensions or area.

APPENDIX D

Proposed Development Plan

hive ENGINEERING



TYPICAL STREET CROSS-SECTION

SCALE: N.T.S.

CROISSANT CROWBUSH CRESCENT

TERRASSE AUGUSTA TERRACE

CROISSANT CROWBUSH CRESCENT

PROPOSED STORMWATER DETENTION POND

RYAN STREET

PROPOSED COURT STREET

PROPOSED STORM SEWER
PROPOSED SANITARY SEWER
PROPOSED WATERMAIN

PROPOSED STORM SEWER
PROPOSED SANITARY SEWER
PROPOSED WATERMAIN

PROPOSED BELFRY STREET

PROPOSED DRAINAGE SWALE

PROPOSED DRAINAGE SWALE

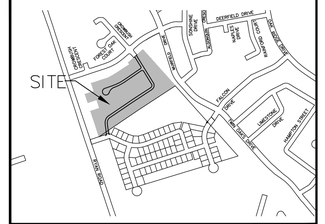
PROPOSED STORMWATER DETENTION POND

PROMENADE MUIRFIELD DRIVE

PROMENADE SATARA DIVE

20-1 20-2 20-3 20-4 20-5 20-6 20-7 20-8 20-9 20-10 20-11 20-12 20-13 20-14 20-15 20-16 20-17 20-18 20-19 20-20 20-21 20-22 20-23 20-24 20-25 20-26 20-27 20-28 20-29 20-30 20-31 20-32 20-33 20-34 20-35 20-36 20-37 20-38 20-39 20-40 20-41 20-42 20-43 20-44 20-45 20-46 20-47 20-48 20-49 20-50 4811 m² 20-1000

KEY PLAN:



LEGEND:	PROPOSED	EXISTING
EDGE OF PAVEMENT		
LOTLINE		
WATERMAIN & GATE VALVE	W — M — W	EW — M3
SANITARY PIPE & MANHOLE	SAN — NYS	ESAN — NYS3
STORM PIPE & MANHOLE	STM — PLS	ESTM — PLS3
UTILITY LINES & POLE	— OH — HO —	— EOH — HO3 —
STREET BOUNDARY		SANITARY LATERAL
PROPERTY BOUNDARY		STORM LATERAL
EASEMENT		WATER LATERAL
CURB & DRIVEWAY CUT		CATCH BASIN LEAD
CATCH BASIN		ENDCAP / CULVERT
FIRE HYDRANT		LIGHT STANDARD / HEADWALL
STREET TREE		PHONE PEDESTAL / SIDEWALK
ROAD SIGN		URD BOX / FENCE

SEAL:

REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
0	2021/02/04	EIA APPLICATION

PROJECT NO: 201-08268
DATE: (YYYY/MM/DD) 2021/02/04
ORIGINAL SCALE: HORIZONTAL: 1:750 VERTICAL: NA
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm
DESIGNED BY: S. WELLS
DRAWN BY: S. WELLS
CHECKED BY: D. LEBLANC
APPROVED BY: D. LEBLANC
SCALE: 1:750 METRIC
15 10 5 0 15 30 45

WSP Canada Inc.
1070 St. George Boulevard, Suite 160
Moncton, New Brunswick, Canada E1E 4K7
T 506-857-1675 F 506-857-1679 www.wsp.com

CLIENT: ROBALY HOMES
CLIENT REF. #: REF NUM

PROJECT: NEW RESIDENTIAL DEVELOPMENT

TITLE: STREET LAYOUT AND SERVICING SCHEMATIC

SHEET NUMBER: 1
SHEET # 1 OF 1

ISSUE: EIA APPLICATION
DATE OF: 2021/02/04
REV # 0

XREFS: (DIESEL evaluation (clear)

WSP REF. NO.: ### K:\MONCTON\2020\201-08268 - ROBALY HOMES, DEVELOPMENT, MAGNETIC HILL ESTATES\DWG\ENG\PRELIMINARY\201-08268-PLAN PROFILE.DWG OVERALL PRINTED: 1:54 PM 2021/02/04 BY: SCOTT WELLS

APPENDIX E

Topography Mapping and Plan

hive ENGINEERING

CROISSANT CROWBUSH CRESCENT

TERRASSE AUGUSTA TERRACE

GRID NORTH

SEE INSET A

SEE INSET B

87–1
PLAN 15060
Reg. 1987-07-21
PID 70543123

72–13
PLAN 730
Reg. 1972-09-19
PID 10168882

72–14
PLAN 730
Reg. 1972-09-19
PID 10168890

72–5
PLAN 730
Reg. 1972-09-19
PID 10168833

20–1
PLAN 16030
Reg. 2001-07-23
PID 70543220

15–15A
PLAN 16030
Reg. 2001-07-23
PID 70543212

15–15B
PLAN 16030
Reg. 2001-07-23
PID 70543204

11–1
PLAN 16030
Reg. 2001-07-23
PID 70543196

11–2
PLAN 16030
Reg. 2001-07-23
PID 70543188

PARCEL "A"
PLAN 11382
Reg. 1977-12-16
PID 10018940

03–11
PLAN 16294945
Reg. 2003-05-26
PID 70391099

03–12
PLAN 16294945
Reg. 2003-05-26
PID 70391107

03–13
PLAN 16294945
Reg. 2003-05-26
PID 70391115

03–14
PLAN 16294945
Reg. 2003-05-26
PID 70391123

03–15
PLAN 16294945
Reg. 2003-05-26
PID 70391131

03–16
PLAN 16294945
Reg. 2003-05-26
PID 70391149

03–17
PLAN 16294945
Reg. 2003-05-26
PID 70391156

03–18
PLAN 16294945
Reg. 2003-05-26
PID 70391164

03–19
PLAN 16294945
Reg. 2003-05-26
PID 70391172

LAND FOR PUBLIC PURPOSES
PLAN 20134
Reg. 1961-08-02
PID 70299037

ROBALY HOMES INC.
Doc. 39063200
Reg. 2018-06-15
PID 70631181

ROBALY HOMES INC.
Doc. 39063200
Reg. 2018-06-15
PID 938744

TOTAL AREA
5.98 ha

FUTURE STREET
PLAN 37945491
Reg. 2018-04-24
PID 70637507

PROMENADE SATARA DIVE

PROMENADE MUIRFIELD DRIVE

WETLAND AREA AS DELINEATED BY JOHN WILE, WETLAND CONSULTANT JUNE 15, 2009

LAND FOR PUBLIC PURPOSES
PLAN 36872233
Reg. 2017-04-03
PID 70629431

0.14 DAR ENCROACHMENT

INSET A
SCALE 1:250

INSET B
SCALE 1:250

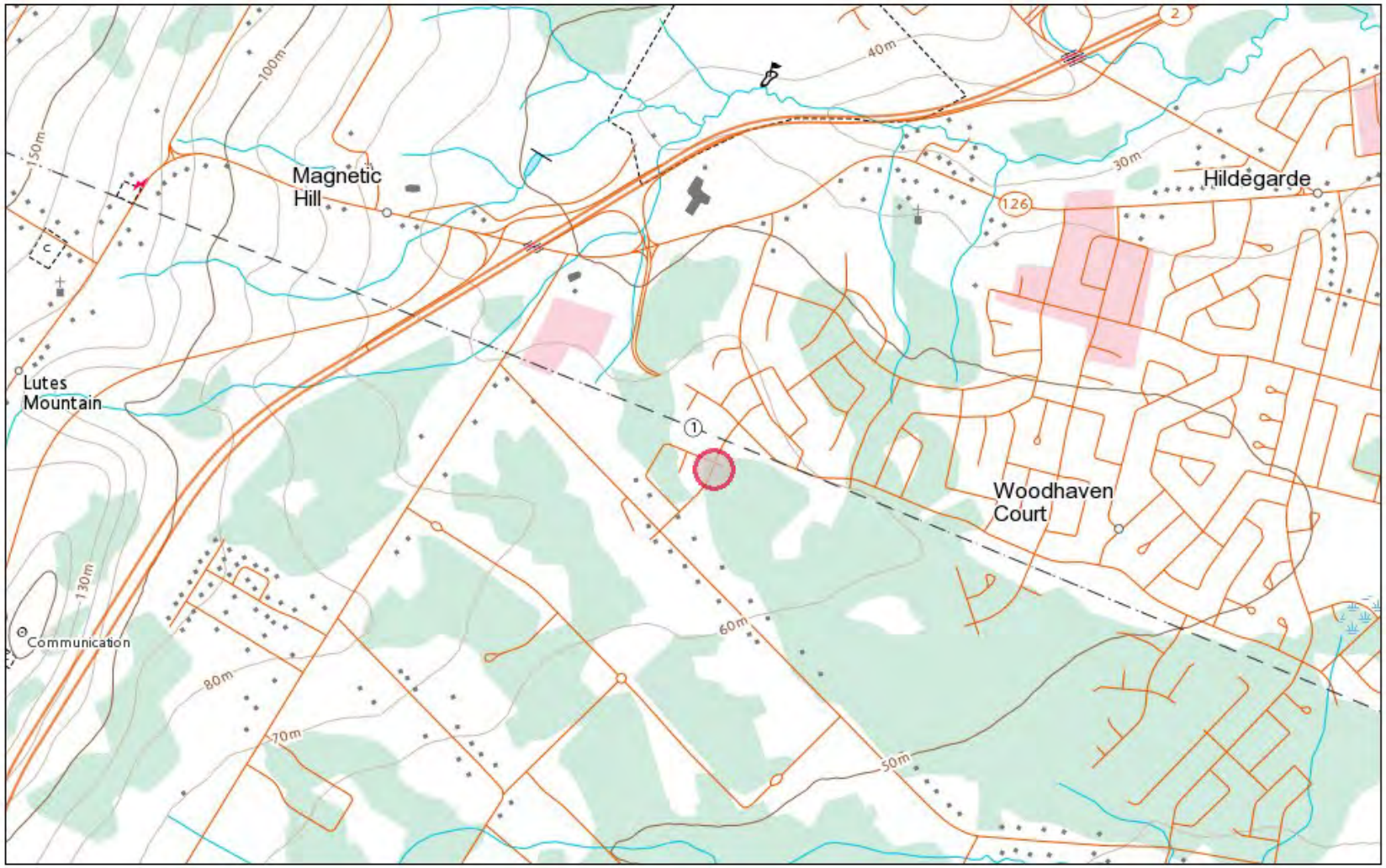
LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
SURVEY SYSTEM COORDINATE MONUMENT		FOUND	Fd.
STANDARD SURVEY MARKER PLACED		CALCULATED	(c)
STANDARD SURVEY MARKER FOUND		REGISTERED	Reg.
CALCULATED COORDINATE POINT		DERIVED FROM 5' DOUBLE TIES THAN	(d)
TABULATED COORDINATE REFERENCE		NBLS REGISTRATION NUMBER	#XX-#
SCRIBED WOODEN SURVEY POST		SQUARE METRE(S)	m²
WOODEN SURVEY POST		MILLIMETER(S)	mm.
SQUARE IRON BAR FOUND		HECTARE	ha
IRON PIPE FOUND		RADIUS	R
ROUND IRON BAR FOUND		DIAMETER	ø
BOREHOLE / TEST PIT		NEW BRUNSWICK LAND SURVEYOR	NBLS
WATER VALVE / FIRE HYDRANT		ELEVATION	ELEV.
CATCH BASIN		INVERT	INV.
CURB MOUNTED CATCH BASIN		FENCE	
SQUARE CATCH BASIN		OVERHEAD LINE(S)	
SLUICE BOX		CENTRELINE	
MANHOLE		UNDERGROUND LINE(S)	
UTILITY POLE / GUY		CURB	
CULVERT		TOP OF ROCK	
LIGHT STANDARD		BOTTOM OF ROCK	
TREE(S)		TOP OF SLOPE	
		BOTTOM OF SLOPE	
WELL		WATER LINE	
SIGN		TREELINE	
PAINTED LINE		SANITARY SEWER LINE	
		STORM SEWER LINE	
LANDS DEALT WITH BY THIS PLAN		ORDINARY HIGH WATER MARK	

wsp
1070 ST. GEORGE BOULEVARD, SUITE 160
MONCTON, NEW BRUNSWICK
CANADA, E1E 4K7
PHONE: (506) 857-9075
WWW.WSP.COM

DRAWN: NJB	FIELD: SGD	CHECKED: –	
JOB: 201–08268	CAD: 201–08268–510	ZONE: 14T–86	

Toporama



November 30, 2021

pointLayer

Override 1

1:17,500

0 0.15 0.3 0.6 mi

0 0.225 0.45 0.9 km

APPENDIX F

Atlantic Canada Conservation Data Centre Report

hive ENGINEERING

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 6980: Moncton, NB

Prepared 22 June 2021
by C. Robicheau, Data Manager

CONTENTS OF REPORT

Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The AC CDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the AC CDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
MonctonNB_6980ob.xls	Rare or legally-protected Flora and Fauna in your study area
MonctonNB_6980ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area

1.2 RESTRICTIONS

The AC CDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting AC CDC data, recipients assent to the following limits of use:

a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c) The AC CDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
d) AC CDC data responses are restricted to the data in our Data System at the time of the data request.
e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
f) AC CDC data responses are not to be construed as exhaustive inventories of taxa in an area.
g) The absence of a taxon cannot be inferred by its absence in an AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

Please direct any additional questions about AC CDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sean.blaney@accdc.ca

Animals (Fauna)
John Klymko, Zoologist
Tel: (506) 364-2660
john.klymko@accdc.ca

Plant Communities
Sarah Robinson, Community Ecologist
Tel: (506) 364-2664
sarah.robinson@accdc.ca

Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
james.churchill@accdc.ca

Billing
Jean Breau
Tel: (506) 364-2657
jean.breau@accdc.ca

Questions on the biology of Federal Species at Risk can be directed to AC CDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost
(902) 670-8187
Emma.Vost@novascotia.ca

Western: Sarah Spencer
(902) 541-0081
Sarah.Spencer@novascotia.ca

Central: Shavonne Meyer
(902) 893-0816
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
(902) 890-1046
Kimberly.George@novascotia.ca

Eastern: Harrison Moore
(902) 497-4119
Harrison.Moore@novascotia.ca

Eastern: Maureen Cameron-MacMillan
(902) 295-2554
Maureen.Cameron-MacMillan@novascotia.ca

Eastern: Elizabeth Walsh
(902) 563-3370
Elizabeth.Walsh@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

2.1 FLORA

The study area contains 4 records of 4 vascular and no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 158 records of 50 vertebrate, 8 records of 5 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within the study area.

RESOLUTION

- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- 3.0 within kilometers
- 2.7 within 500s of meters
- 2.0 within 100s of meters
- 1.7 within 10s of meters

HIGHER TAXON

- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

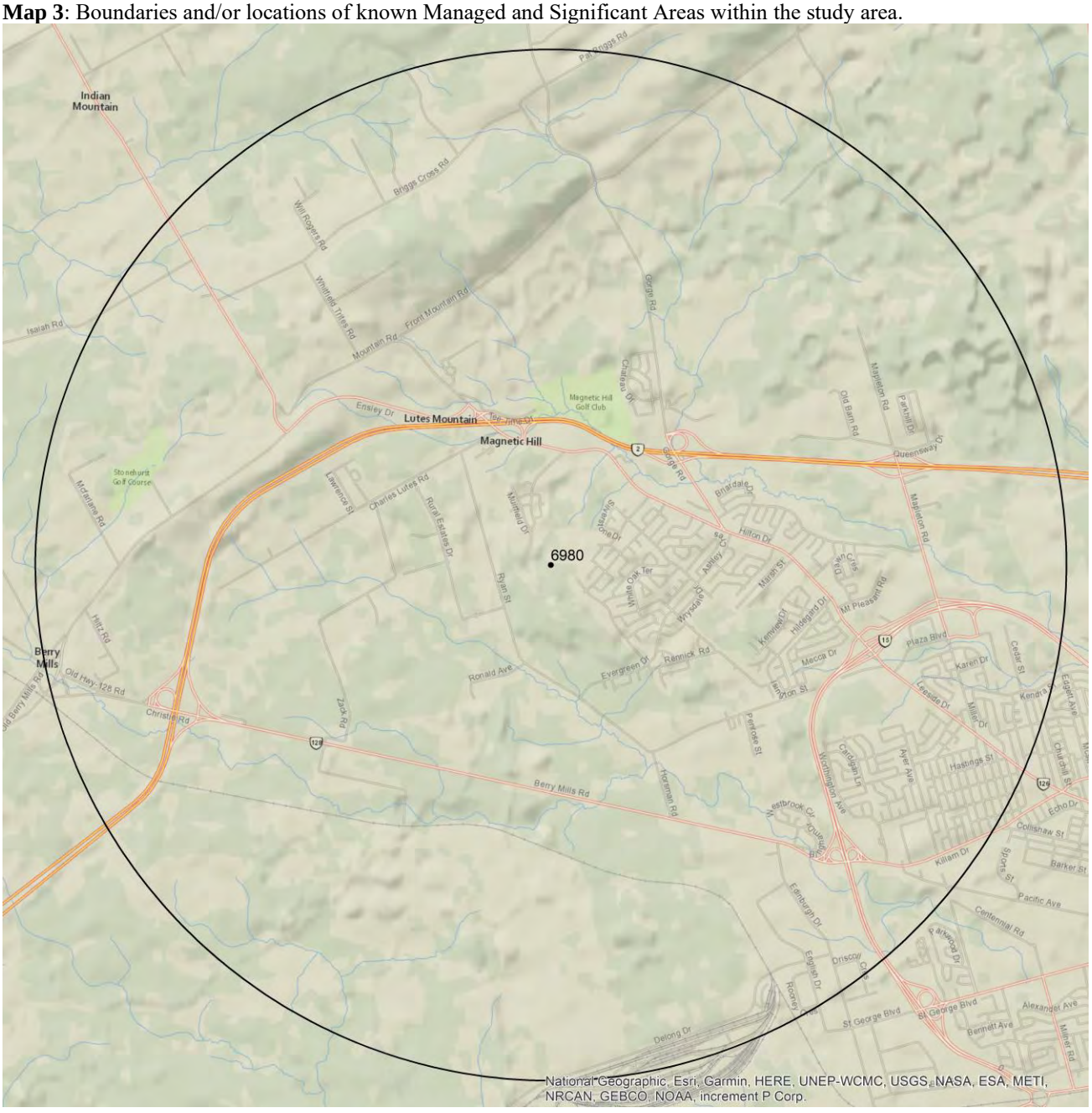
3.1 MANAGED AREAS

The GIS scan identified no managed areas in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified no biologically significant sites in the vicinity of the study area (Map 3 and attached file: *msa.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the study area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
P	*Fraxinus nigra*	Black Ash	Threatened			S4S5	1	2.1 ± 0.0
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S2	1	3.6 ± 0.0
P	*Elymus canadensis*	Canada Wild Rye				S2	1	3.7 ± 1.0
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	1	4.6 ± 5.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	1	2.6 ± 1.0
A	*Lanius ludovicianus*	Loggerhead Shrike	Endangered	Endangered		SXB,SXM	1	4.7 ± 0.0
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	1	2.9 ± 7.0
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	4.0 ± 7.0
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	2.9 ± 7.0
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1	4.0 ± 7.0
A	*Hirundo rustica*	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	5	2.5 ± 2.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	5	4.0 ± 7.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	6	4.0 ± 7.0
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	1	2.6 ± 1.0
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	1	2.7 ± 11.0
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	1	4.7 ± 0.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	1	4.7 ± 0.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	2	4.0 ± 7.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	6	3.3 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	7	4.0 ± 7.0
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	2	2.4 ± 1.0
A	*Fulica americana*	American Coot	Not At Risk			S1S2B,S1S2M	1	4.0 ± 7.0
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk			S2B,S2M	1	4.7 ± 0.0
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B,S2M	1	4.0 ± 7.0
A	*Vireo flavifrons*	Yellow-throated Vireo				S1?B,S1?M	1	4.0 ± 7.0
A	*Progne subis*	Purple Martin				S1B,S1M	1	2.9 ± 7.0
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	2	4.7 ± 0.0
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	1	4.0 ± 7.0
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	1	4.7 ± 0.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	1	4.0 ± 7.0
A	*Cistothorus palustris*	Marsh Wren				S2B,S2M	8	4.0 ± 7.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	6	2.9 ± 7.0
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	1	4.7 ± 0.0
A	*Mareca strepera*	Gadwall				S2B,S3M	1	4.0 ± 7.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	2	4.7 ± 0.0
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	3	3.6 ± 0.0
A	*Spatula clypeata*	Northern Shoveler				S2S3B,S2S3M	3	4.0 ± 7.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	3	4.0 ± 7.0
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	2	2.7 ± 9.0
A	*Rallus limicola*	Virginia Rail				S3B,S3M	5	4.0 ± 7.0
A	*Charadrius vociferus*	Killdeer				S3B,S3M	13	2.5 ± 2.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Tringa semipalmata*	Willet				S3B,S3M	1	1.3 ± 0.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	1	4.7 ± 0.0
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	4	4.0 ± 7.0
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	1	4.0 ± 7.0
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	1	2.4 ± 0.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	9	1.3 ± 4.0
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	10	4.0 ± 7.0
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	2	2.5 ± 0.0
A	*Anas acuta*	Northern Pintail				S3B,S5M	2	4.0 ± 7.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	5	4.0 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	11	2.5 ± 2.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	9	4.0 ± 7.0
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	2	2.1 ± 0.0
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	3	1.9 ± 0.0
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	1	2.0 ± 1.0
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	2	3.6 ± 0.0
I	*Satyrium acadica*	Acadian Hairstreak				S3	1	1.6 ± 0.0
I	*Satyrium liparops*	Striped Hairstreak				S3S4	1	1.9 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting your study area are indicated below with "YES".

New Brunswick

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Chrysemys picta picta	Eastern Painted Turtle			No
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Glyptemys insculpta	**Wood Turtle**	**Threatened**	**Threatened**	**YES**
Haliaeetus leucocephalus	Bald Eagle		Endangered	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat hibernaculum or bat species occurrence		**[Endangered][1]**	**[Endangered][1]**	**YES**

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
70	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
62	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
21	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
3	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
3	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
2	Epworth, W. 2012. Species at Risk records, 2009-11. Fort Folly Habitat Recovery Program, 162 recs.
2	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
1	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.

# recs	CITATION
1	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
1	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
1	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
1	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
1	Majka, C. 2009. Université de Moncton Insect Collection: Carabidae, Cerambycidae, Coccinellidae. Université de Moncton, 540 recs.
1	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 57560 records of 144 vertebrate and 1438 records of 81 invertebrate fauna; 8895 records of 320 vascular and 2262 records of 198 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs (including “location-sensitive” species). All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	23	27.1 ± 1.0	NB
A	*Myotis septentrionalis*	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	13	27.1 ± 1.0	NB
A	*Perimyotis subflavus*	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	17	17.0 ± 1.0	NB
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1?B,S1?M	1	98.3 ± 0.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1631	29.9 ± 0.0	NB
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	5	55.4 ± 1.0	NB
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	644	2.6 ± 1.0	NB
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy pop.	Endangered		Endangered	SNR	403	13.7 ± 0.0	NB
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	2	20.7 ± 1.0	NB
A	*Lanius ludovicianus*	Loggerhead Shrike	Endangered	Endangered		SXB,SXM	1	4.7 ± 0.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	50	2.9 ± 7.0	NB
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	19	4.0 ± 7.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	98	2.9 ± 7.0	NB
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	28	4.0 ± 7.0	NB
A	*Hirundo rustica*	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	1646	2.5 ± 2.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B,S2M	11	9.8 ± 2.0	NB
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel	Threatened			S2B,SUM	1	39.8 ± 0.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	717	2.8 ± 0.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	275	7.7 ± 0.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	1561	4.0 ± 7.0	NB
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened		Threatened	S3	3	15.3 ± 1.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	2151	4.0 ± 7.0	NB
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S3S4M	436	32.9 ± 0.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	7018	2.6 ± 1.0	NB
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S4M	1716	10.0 ± 0.0	NB
A	*Coturnicops noveboracensis*	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	5	40.7 ± 3.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	6	40.8 ± 0.0	NB
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	47	13.4 ± 64.0	NB
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	112	2.7 ± 11.0	NB
A	*Salmo salar pop. 12*	Atlantic Salmon - Gaspe - Southern Gulf of St	Special Concern		Special Concern	S2S3	12	25.4 ± 50.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		Lawrence pop.							
A	*Balaenoptera physalus*	Fin Whale	Special Concern	Special Concern		S2S3	1	56.2 ± 1.0	NB
A	*Acipenser brevirostrum*	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	2	94.1 ± 10.0	NB
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	21	22.7 ± 1.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	125	4.7 ± 0.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	601	4.7 ± 0.0	NB
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	794	4.0 ± 7.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	373	10.7 ± 7.0	NB
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	278	3.3 ± 0.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S3M	22	14.4 ± 0.0	NB
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern		Spec.Concern	S4	3	40.5 ± 0.0	NB
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern			S4	29	28.5 ± 0.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	834	4.0 ± 7.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern	Special Concern	S4N,S4M	53	30.0 ± 1.0	NB
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S1?	4	63.1 ± 0.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	356	7.7 ± 5.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	50	2.4 ± 1.0	NB
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	10	12.1 ± 0.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1S2B,S1S2M	65	4.0 ± 7.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	11	47.0 ± 0.0	NB
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	3	36.5 ± 1.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk			S2B,S2M	26	4.7 ± 0.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B,S2M	191	4.0 ± 7.0	NB
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S3	23	14.4 ± 10.0	NB
A	*Desmognathus fuscus - Quebec / New Brunswick population*	Northern Dusky Salamander - Quebec / New Brunswick population	Not At Risk			S3	1	59.9 ± 0.0	NB
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	691	8.4 ± 1.0	NB
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	51	30.0 ± 1.0	NB
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	2	39.2 ± 1.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	1328	1.3 ± 0.0	NB
A	*Canis lupus*	Gray Wolf	Not At Risk		Extirpated	SX	2	65.7 ± 100.0	NB
A	*Puma concolor pop. 1*	Eastern Cougar	Data Deficient		Endangered	SNA	119	9.1 ± 1.0	NB
A	*Calidris canutus rufa*	Red Knot rufa subspecies	E,SC	Endangered	Endangered	S2M	724	28.6 ± 44.0	NB
A	*Morone saxatilis*	Striped Bass	E,SC			S3	8640	15.3 ± 0.0	NB
A	*Salmo salar*	Atlantic Salmon	E,T,SC			S2S3	1	94.7 ± 0.0	NB
A	*Thryothorus ludovicianus*	Carolina Wren				S1	10	9.2 ± 0.0	NB
A	*Salvelinus alpinus*	Arctic Char				S1	3	65.6 ± 1.0	NB
A	*Vireo flavifrons*	Yellow-throated Vireo				S1?B,S1?M	4	4.0 ± 7.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	2513	7.4 ± 0.0	NB
A	*Aythya americana*	Redhead				S1B,S1M	10	21.6 ± 0.0	NB
A	*Gallinula galeata*	Common Gallinule				S1B,S1M	53	7.2 ± 0.0	NB
A	*Antigone canadensis*	Sandhill Crane				S1B,S1M	24	31.6 ± 0.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B,S1M	56	7.9 ± 0.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	34	14.3 ± 1.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B,S1M	10	9.3 ± 1.0	NB
A	*Progne subis*	Purple Martin				S1B,S1M	140	2.9 ± 7.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	113	7.9 ± 0.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	178	7.3 ± 0.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S4M,S2N	11	32.8 ± 1.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	70	4.7 ± 0.0	NB
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	25	25.5 ± 7.0	NB
A	*Fratercula arctica*	Atlantic Puffin				S1B,SUN,SUM	3	58.2 ± 11.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	17	8.4 ± 0.0	NB
A	*Branta bernicla*	Brant				S1N,S2S3M	35	30.0 ± 1.0	NB
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	8	4.0 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	6	4.7 ± 0.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	83	4.0 ± 7.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B,S1S2M	6	13.8 ± 0.0	NB
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	12	10.7 ± 7.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1S2B,S4N,S5M	4	38.0 ± 0.0	NB
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	51	19.0 ± 0.0	NB
A	*Cistothorus palustris*	Marsh Wren				S2B,S2M	82	4.0 ± 7.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	143	2.9 ± 7.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	30	30.2 ± 7.0	NB
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	128	4.7 ± 0.0	NB
A	*Mareca strepera*	Gadwall				S2B,S3M	361	4.0 ± 7.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	40	10.1 ± 7.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	186	4.7 ± 0.0	NB
A	*Anser caerulescens*	Snow Goose				S2M	24	9.3 ± 5.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N,S2M	50	7.2 ± 2.0	NB
A	*Somateria spectabilis*	King Eider				S2N,S2M	4	30.5 ± 0.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	94	3.6 ± 0.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	26	10.7 ± 7.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	15	20.5 ± 7.0	NB
A	*Spatula clypeata*	Northern Shoveler				S2S3B,S2S3M	476	4.0 ± 7.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	101	6.0 ± 7.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	639	4.0 ± 7.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	219	28.7 ± 0.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	43	2.7 ± 9.0	NB
A	*Cepphus grylle*	Black Guillemot				S3	67	45.1 ± 5.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	176	10.1 ± 7.0	NB
A	*Spinus pinus*	Pine Siskin				S3	458	6.0 ± 7.0	NB
A	*Salvelinus namaycush*	Lake Trout				S3	1	29.2 ± 0.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	143	49.9 ± 1.0	NB
A	*Eptesicus fuscus*	Big Brown Bat				S3	12	5.7 ± 10.0	NB
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	212	7.6 ± 0.0	NB
A	*Rallus limicola*	Virginia Rail				S3B,S3M	347	4.0 ± 7.0	NB
A	*Charadrius vociferus*	Killdeer				S3B,S3M	1007	2.5 ± 2.0	NB
A	*Tringa semipalmata*	Willet				S3B,S3M	1116	1.3 ± 0.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	158	4.7 ± 0.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	98	4.0 ± 7.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	66	4.0 ± 7.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	62	2.4 ± 0.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	309	1.3 ± 4.0	NB
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	135	4.0 ± 7.0	NB
A	*Somateria mollissima*	Common Eider				S3B,S4M,S3N	218	15.7 ± 80.0	NB
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	323	2.5 ± 0.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	163	4.0 ± 7.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	319	11.5 ± 0.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	1045	10.0 ± 0.0	NB
A	*Phalaropus fulicarius*	Red Phalarope				S3M	5	47.3 ± 0.0	NB
A	*Melanitta americana*	Black Scoter				S3M,S1S2N	260	8.7 ± 0.0	NB
A	*Bucephala albeola*	Bufflehead				S3M,S2N	129	13.4 ± 64.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	102	15.0 ± 0.0	NB
A	*Uria lomvia*	Thick-billed Murre				S3N,S3M	2	73.3 ± 0.0	NS
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	95	41.3 ± 1.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	629	4.0 ± 7.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	1016	2.5 ± 2.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	1189	4.0 ± 7.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	451	2.1 ± 0.0	NB
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	77	14.0 ± 7.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	2051	13.8 ± 0.0	NB
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	2666	9.5 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	475	9.5 ± 18.0	NB
A	*Calidris alba*	Sanderling				S3S4M,S1N	1569	30.0 ± 1.0	NB
A	*Morus bassanus*	Northern Gannet				SHB,S5M	183	28.6 ± 44.0	NB
I	*Cicindela marginipennis*	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1	94	86.9 ± 0.0	NB
I	*Bombus (Psithyrus) bohemicus*	Gypsy Cuckoo Bumble Bee	Endangered	Endangered		S1	6	18.9 ± 5.0	NB
I	*Gomphus ventricosus*	Skillet Clubtail	Endangered	Endangered	Endangered	S1S2	2	51.7 ± 0.0	NB
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	238	1.9 ± 0.0	NB
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	12	76.2 ± 0.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Special Concern	S2	34	15.0 ± 1.0	NB
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	25	62.2 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumblebee	Special Concern	Special Concern		S3?	168	23.4 ± 0.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	31	2.0 ± 1.0	NB
I	*Appalachina sayana*	Spike-lip Crater	Not At Risk			S3?	1	78.0 ± 1.0	NB
I	*Erora laeta*	Early Hairstreak				S1	1	5.7 ± 1.0	NB
I	*Leucorrhinia patricia*	Canada Whiteface				S1	10	75.8 ± 1.0	NB
I	*Arigomphus furcifer*	Lilypad Clubtail				S1	1	89.3 ± 0.0	NB
I	*Plebejus saepiolus*	Greenish Blue				S1S2	2	24.5 ± 7.0	NB
I	*Cicindela ancocisconensis*	Appalachian Tiger Beetle				S2	2	69.2 ± 0.0	NB
I	*Satyrium calanus*	Banded Hairstreak				S2	1	97.6 ± 7.0	NB
I	*Strymon melinus*	Grey Hairstreak				S2	2	13.3 ± 2.0	NB
I	*Somatochlora brevicincta*	Quebec Emerald				S2	2	13.4 ± 0.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S2	8	27.4 ± 1.0	NB
I	*Ladona exusta*	White Corporal				S2	1	63.6 ± 0.0	NB
I	*Coenagrion interrogatum*	Subarctic Bluet				S2	3	79.6 ± 1.0	NB
I	*Ischnura posita*	Fragile Forktail				S2	5	28.0 ± 0.0	NB
I	*Chrysops delicatulus*	a Horse Fly				S2S3	1	89.4 ± 1.0	NB
I	*Callophrys henrici*	Henry's Elfin				S2S3	12	7.3 ± 0.0	NB
I	*Psyrassa unicolor*	a Longhorned Beetle				S3	1	35.9 ± 0.0	NB
I	*Elaphrus americanus*	a Ground Beetle				S3	1	46.8 ± 0.0	NB
I	*Agonum crenistriatum*	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	*Agonum consimile*	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	*Lachnocrepis parallela*	a Ground Beetle				S3	1	45.8 ± 0.0	NB
I	*Dyschirius setosus*	a Ground Beetle				S3	3	45.8 ± 0.0	NB
I	*Harpalus fulvilabris*	a Ground Beetle				S3	1	46.5 ± 0.0	NB
I	*Olisthopus parmatus*	a Ground Beetle				S3	1	45.5 ± 0.0	NB
I	*Amara pallipes*	a Ground Beetle				S3	2	8.2 ± 1.0	NB
I	*Carabus maeander*	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	*Carabus serratus*	a Ground Beetle				S3	2	9.4 ± 1.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	15	3.6 ± 0.0	NB
I	*Xylotrechus undulatus*	a Longhorned Beetle				S3	2	27.8 ± 1.0	NB
I	*Calathus gregarius*	a Ground Beetle				S3	1	57.3 ± 1.0	NB
I	*Gonioctena americana*	a Leaf Beetle				S3	1	46.5 ± 0.0	NB
I	*Naemia seriata*	a Ladybird beetle				S3	9	40.7 ± 0.0	NB
I	*Beckerus appressus*	A Click Beetle				S3	1	57.1 ± 0.0	NB
I	*Saperda lateralis*	a Longhorned Beetle				S3	1	66.3 ± 0.0	NS
I	*Trachysida aspera*	a Longhorned Beetle				S3	1	50.6 ± 0.0	NB
I	*Dicerca caudata*	Tailed Jewel Borer				S3	1	56.8 ± 0.0	NB
I	*Enoclerus muttkowskii*	a Checkered Beetle				S3	2	8.6 ± 0.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	4	39.9 ± 0.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	20	9.9 ± 1.0	NB
I	*Papilio brevicauda*	Short-tailed Swallowtail				S3	13	44.0 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	bretonensis								
I	*Lycaena hyllus*	Bronze Copper				S3	164	7.1 ± 1.0	NB
I	*Lycaena dospassosi*	Salt Marsh Copper				S3	108	30.2 ± 0.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	17	1.6 ± 0.0	NB
I	*Callophrys polios*	Hoary Elfin				S3	15	13.4 ± 0.0	NB
I	*Plebejus idas*	Northern Blue				S3	6	72.3 ± 0.0	NS
I	*Plebejus idas empetri*	Crowberry Blue				S3	26	45.3 ± 7.0	NB
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	19	6.2 ± 0.0	NB
I	*Boloria bellona*	Meadow Fritillary				S3	10	87.5 ± 0.0	NB
I	*Boloria chariclea*	Arctic Fritillary				S3	10	38.4 ± 7.0	NB
I	*Polygonia satyrus*	Satyr Comma				S3	5	37.9 ± 5.0	NB
I	*Polygonia gracilis*	Hoary Comma				S3	4	72.4 ± 15.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	10	5.7 ± 10.0	NB
I	*Gomphus vastus*	Cobra Clubtail				S3	8	89.5 ± 0.0	NB
I	*Gomphus abbreviatus*	Spine-crowned Clubtail				S3	9	69.2 ± 0.0	NB
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	7	13.6 ± 0.0	NB
I	*Dorocordulia lepida*	Petite Emerald				S3	5	37.7 ± 1.0	NB
I	*Somatochlora cingulata*	Lake Emerald				S3	4	53.5 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3	9	32.0 ± 0.0	NB
I	*Williamsonia fletcheri*	Ebony Boghaunter				S3	19	9.9 ± 2.0	NB
I	*Lestes eurinus*	Amber-Winged Spreadwing				S3	35	13.3 ± 1.0	NB
I	*Enallagma geminatum*	Skimming Bluet				S3	6	77.1 ± 0.0	NB
I	*Enallagma signatum*	Orange Bluet				S3	4	44.3 ± 0.0	NB
I	*Stylurus scudderi*	Zebra Clubtail				S3	11	6.0 ± 0.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	54	15.9 ± 1.0	NB
I	*Leptodea ochracea*	Tidewater Mucket				S3	65	44.5 ± 1.0	NB
I	*Neohelix albolabris*	Whitelip				S3	1	82.5 ± 0.0	NB
I	*Pantala hymenaea*	Spot-Winged Glider				S3B,S3M	6	28.8 ± 0.0	NB
I	*Collops vittatus*	Banded Soft-winged Flower Beetle				S3S4	1	14.5 ± 3.0	NB
I	*Hemicrepidius memnonius*	a Click Beetle				S3S4	3	35.9 ± 0.0	NB
I	*Bolitophagus corticola*	a Darkling Beetle				S3S4	1	35.9 ± 0.0	NB
I	*Satyrium liparops*	Striped Hairstreak				S3S4	33	1.9 ± 0.0	NB
I	*Satyrium liparops strigosum*	Striped Hairstreak				S3S4	4	5.3 ± 1.0	NB
I	*Cupido comyntas*	Eastern Tailed Blue				S3S4	11	41.6 ± 0.0	NB
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered	Endangered	Endangered	SH	2	66.6 ± 1.0	NB
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	2	81.9 ± 0.0	NS
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened	Threatened		S1	787	29.2 ± 0.0	NB
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	4	34.8 ± 1.0	NB
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened		S1S2	15	27.5 ± 0.0	NB
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S2	66	49.0 ± 0.0	NB
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	15	78.9 ± 1.0	NS
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	13	58.0 ± 0.0	NB
N	*Aloina rigida*	Aloe-Like Rigid Screw Moss				S1	1	49.6 ± 0.0	NB
N	*Arrhenopterum heterostichum*	One-sided Groove Moss				S1	1	79.7 ± 0.0	NB
N	*Campylostelium saxicola*	a Moss				S1	1	82.1 ± 0.0	NB
N	*Dicranoweisia crispula*	Mountain Thatch Moss				S1	1	57.4 ± 0.0	NB
N	*Didymodon rigidulus var. gracilis*	a moss				S1	1	64.7 ± 1.0	NB
N	*Syntrichia ruralis*	a Moss				S1	1	63.9 ± 0.0	NB
N	*Zygodon viridissimus var. viridissimus*	a Moss				S1	1	80.5 ± 0.0	NB
N	*Enchylium tenax*	Soil Tarpaper Lichen				S1	2	82.7 ± 0.0	PE
N	*Sticta fuliginosa*	Peppered Moon Lichen				S1	14	81.8 ± 0.0	NS
N	*Cladonia straminea*	Reptilian Pixie-cup Lichen				S1	5	50.8 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Coccocarpia palmicola*	Salted Shell Lichen				S1	1	50.8 ± 1.0	NB
N	*Peltigera malacea*	Veinless Pelt Lichen				S1	2	61.8 ± 1.0	NB
N	*Bryoria bicolor*	Electrified Horsehair Lichen				S1	1	61.8 ± 1.0	NB
N	*Hygrobiella laxifolia*	Lax Notchwort				S1?	1	62.5 ± 1.0	NB
N	*Bartramia ithyphylla*	Straight-leaved Apple Moss				S1?	2	58.3 ± 1.0	NB
N	*Dicranum condensatum*	Condensed Broom Moss				S1?	2	57.5 ± 0.0	NB
N	*Entodon brevisetus*	a Moss				S1?	1	52.7 ± 10.0	NB
N	*Oxyrrhynchium hians*	Light Beaked Moss				S1?	1	67.2 ± 0.0	NB
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	4	29.5 ± 1.0	NB
N	*Plagiothecium latebricola*	Alder Silk Moss				S1?	3	63.8 ± 1.0	NB
N	*Rhytidium rugosum*	Wrinkle-leaved Moss				S1?	2	64.7 ± 1.0	NB
N	*Seligeria recurvata*	a Moss				S1?	3	24.6 ± 15.0	NB
N	*Rhizomnium pseudopunctatum*	Felted Leafy Moss				S1?	1	78.1 ± 0.0	NB
N	*Heterodermia squamulosa*	Scaly Fringe Lichen				S1?	75	83.0 ± 1.0	NS
N	*Cephaloziella spinigera*	Spiny Threadwort				S1S2	2	47.8 ± 0.0	NB
N	*Odontoschisma francisci*	Holt's Notchwort				S1S2	4	48.6 ± 0.0	NB
N	*Harpanthus flotovianus*	Great Mountain Flapwort				S1S2	2	50.3 ± 1.0	NB
N	*Jungermannia obovata*	Egg Flapwort				S1S2	1	60.0 ± 0.0	NB
N	*Odontoschisma sphagni*	Bog-Moss Flapwort				S1S2	1	90.4 ± 0.0	NB
N	*Pallavicinia lyellii*	Lyell's Ribbonwort				S1S2	2	52.7 ± 1.0	NB
N	*Radula tenax*	Tenacious Scalewort				S1S2	1	60.0 ± 0.0	NB
N	*Reboulia hemisphaerica*	Purple-margined Liverwort				S1S2	1	64.7 ± 0.0	NB
N	*Brachythecium acuminatum*	Acuminate Ragged Moss				S1S2	3	60.0 ± 2.0	NB
N	*Ptychostomum salinum*	Saltmarsh Bryum				S1S2	1	63.8 ± 1.0	NB
N	*Tortula obtusifolia*	a Moss				S1S2	1	98.5 ± 0.0	NB
N	*Distichium inclinatum*	Inclined Iris Moss				S1S2	5	64.7 ± 1.0	NB
N	*Ditrichum pallidum*	Pale Cow-hair Moss				S1S2	1	52.4 ± 1.0	NB
N	*Drummondia prorepens*	a Moss				S1S2	1	82.2 ± 0.0	NB
N	*Hygrohypnum bestii*	Best's Brook Moss				S1S2	5	52.0 ± 0.0	NB
N	*Seligeria brevifolia*	a Moss				S1S2	4	80.2 ± 0.0	NB
N	*Timmia norvegica*	a moss				S1S2	3	64.9 ± 0.0	NB
N	*Timmia norvegica var. excurrens*	a moss				S1S2	1	64.9 ± 0.0	NB
N	*Tortella humilis*	Small Crisp Moss				S1S2	7	55.3 ± 1.0	NB
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	2	32.2 ± 1.0	NB
N	*Umbilicaria vellea*	Grizzled Rocktripe Lichen				S1S2	1	64.2 ± 1.0	NB
N	*Pilophorus cereolus*	Powdered Matchstick Lichen				S1S2	1	36.2 ± 5.0	NB
N	*Peltigera scabrosa*	Greater Toad Pelt Lichen				S1S2	4	49.0 ± 1.0	NB
N	*Tritomaria scitula*	Mountain Notchwort				S1S3	1	56.2 ± 1.0	NB
N	*Amphidium mougeotii*	a Moss				S2	11	54.3 ± 0.0	NB
N	*Anomodon viticulosus*	a Moss				S2	2	36.6 ± 10.0	NB
N	*Cirriphyllum piliferum*	Hair-pointed Moss				S2	4	35.4 ± 1.0	NB
N	*Dicranella palustris*	Drooping-Leaved Fork Moss				S2	9	50.3 ± 1.0	NB
N	*Didymodon ferrugineus*	Rusty Beard Moss				S2	1	64.4 ± 0.0	NB
N	*Anomodon tristis*	a Moss				S2	9	57.2 ± 10.0	NB
N	*Hypnum pratense*	Meadow Plait Moss				S2	1	87.4 ± 0.0	PE
N	*Isopterygiopsis pulchella*	Neat Silk Moss				S2	7	55.1 ± 1.0	NB
N	*Isothecium myosuroides*	Slender Mouse-tail Moss				S2	2	94.1 ± 3.0	NS
N	*Meesia triquetra*	Three-ranked Cold Moss				S2	1	89.6 ± 100.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S2	6	58.8 ± 4.0	NB
N	*Platydictya jungermannioides*	False Willow Moss				S2	4	24.6 ± 15.0	NB
N	*Pohlia elongata*	Long-necked Nodding Moss				S2	14	57.5 ± 0.0	NB
N	*Pohlia sphagnicola*	a moss				S2	1	76.6 ± 0.0	NB
N	*Seligeria calcarea*	Chalk Brittle Moss				S2	2	50.3 ± 0.0	NB
N	*Sphagnum centrale*	Central Peat Moss				S2	8	51.2 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Sphagnum flexuosum*	Flexuous Peatmoss				S2	4	51.3 ± 10.0	NB
N	*Tayloria serrata*	Serrate Trumpet Moss				S2	7	34.6 ± 100.0	NB
N	*Tetrodontium brownianum*	Little Georgia				S2	13	57.2 ± 10.0	NB
N	*Thamnobryum alleghaniense*	a Moss				S2	25	28.8 ± 0.0	NB
N	*Ulota phyllantha*	a Moss				S2	4	64.7 ± 0.0	NB
N	*Anomobryum julaceum*	Slender Silver Moss				S2	4	64.7 ± 1.0	NB
N	*Cladonia macrophylla*	Fig-leaved Lichen				S2	3	56.7 ± 1.0	NB
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S2	21	32.8 ± 0.0	NB
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	30	74.1 ± 0.0	NB
N	*Anacamptodon splachnoides*	a Moss				S2?	3	57.4 ± 1.0	NB
N	*Andreaea rothii*	a Moss				S2?	5	54.3 ± 0.0	NB
N	*Anomodon minor*	Blunt-leaved Anomodon Moss				S2?	1	35.9 ± 1.0	NB
N	*Ptychostomum pallescens*	Tall Clustered Bryum				S2?	1	64.1 ± 100.0	NB
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S2?	1	52.5 ± 3.0	NB
N	*Hygrohypnum montanum*	a Moss				S2?	2	53.6 ± 1.0	NB
N	*Schistostega pennata*	Luminous Moss				S2?	1	87.2 ± 100.0	NB
N	*Seligeria diversifolia*	a Moss				S2?	2	91.6 ± 0.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	2	52.2 ± 10.0	NB
N	*Trichodon cylindricus*	Cylindric Hairy-teeth Moss				S2?	2	24.6 ± 15.0	NB
N	*Plagiomnium rostratum*	Long-beaked Leafy Moss				S2?	5	59.3 ± 0.0	NB
N	*Ramalina labiosorediata*	Chalky Ramalina Lichen				S2?	1	62.0 ± 1.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	8	79.6 ± 0.0	NB
N	*Imshaugia placorodia*	Eyed Starburst Lichen				S2?	1	83.1 ± 0.0	PE
N	*Nephroma arcticum*	Arctic Kidney Lichen				S2?	2	59.9 ± 1.0	NB
N	*Ptychostomum cernuum*	Swamp Bryum				S2S3	1	64.7 ± 0.0	NB
N	*Calliergonella cuspidata*	Common Large Wetland Moss				S2S3	4	38.4 ± 5.0	NB
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2S3	2	56.7 ± 0.0	NB
N	*Palustriella falcata*	a Moss				S2S3	2	61.6 ± 0.0	NB
N	*Didymodon rigidulus*	Rigid Screw Moss				S2S3	8	60.0 ± 2.0	NB
N	*Ephemerum serratum*	a Moss				S2S3	3	62.7 ± 0.0	NB
N	*Orthotrichum elegans*	Showy Bristle Moss				S2S3	2	35.8 ± 0.0	NB
N	*Pohlia proligera*	Cottony Nodding Moss				S2S3	13	24.6 ± 15.0	NB
N	*Codriophorus fascicularis*	Clustered Rock Moss				S2S3	3	57.4 ± 0.0	NB
N	*Racomitrium affine*	a Moss				S2S3	1	51.4 ± 1.0	NB
N	*Saelania glaucescens*	Blue Dew Moss				S2S3	2	57.4 ± 0.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	3	75.8 ± 0.0	NB
N	*Taxiphyllum deplanatum*	Imbricate Yew-leaved Moss				S2S3	2	60.0 ± 1.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	3	60.0 ± 1.0	NB
N	*Schistidium agassizii*	Elf Bloom Moss				S2S3	3	51.4 ± 1.0	NB
N	*Loeskeobryum brevirostre*	a Moss				S2S3	11	54.3 ± 0.0	NB
N	*Cyrtomnium hymenophylloides*	Short-pointed Lantern Moss				S2S3	7	50.5 ± 0.0	NB
N	*Cetrariella delisei*	Snowbed Icelandmoss Lichen				S2S3	2	38.1 ± 0.0	NB
N	*Cladonia acuminata*	Scantily Clad Pixie Lichen				S2S3	2	64.2 ± 1.0	NB
N	*Cladonia ramulosa*	Bran Lichen				S2S3	4	58.8 ± 1.0	NB
N	*Cladonia sulphurina*	Greater Sulphur-cup Lichen				S2S3	5	48.9 ± 1.0	NB
N	*Dendriscocaulon umhausense*	a lichen				S2S3	1	82.5 ± 0.0	NB
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	1	67.2 ± 1.0	NB
N	*Sphaerophorus globosus*	Northern Coral Lichen				S2S3	13	50.1 ± 0.0	NB
N	*Hypnum curvifolium*	Curved-leaved Plait Moss				S3	8	54.3 ± 0.0	NB
N	*Tortella fragilis*	Fragile Twisted Moss				S3	1	64.9 ± 0.0	NB
N	*Schistidium maritimum*	a Moss				S3	6	61.3 ± 0.0	NB
N	*Hymenostylium recurvirostre*	Hymenostylium Moss				S3	6	65.2 ± 1.0	NB
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	6	82.1 ± 3.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Solorina saccata*	Woodland Owl Lichen				S3	6	64.2 ± 1.0	NB
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S3	3	77.2 ± 0.0	NB
N	*Normandina pulchella*	Rimmed Elf-ear Lichen				S3	20	58.8 ± 1.0	NB
N	*Cladonia farinacea*	Farinose Pixie Lichen				S3	5	58.0 ± 1.0	NB
N	*Hypotrachyna catawbiensis*	Powder-tipped Antler Lichen				S3	17	63.7 ± 0.0	NB
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	6	64.2 ± 1.0	NB
N	*Nephroma bellum*	Naked Kidney Lichen				S3	5	56.5 ± 1.0	NB
N	*Peltigera degenii*	Lustrous Pelt Lichen				S3	3	58.5 ± 1.0	NB
N	*Usnea strigosa*	Bushy Beard Lichen				S3	34	24.7 ± 0.0	NB
N	*Stereocaulon condensatum*	Granular Soil Foam Lichen				S3	8	45.1 ± 0.0	NB
N	*Leptogium laceroides*	Short-bearded Jellyskin Lichen				S3	14	51.5 ± 1.0	NB
N	*Peltigera membranacea*	Membranous Pelt Lichen				S3	25	28.5 ± 0.0	NB
N	*Cladonia botrytes*	Wooden Soldiers Lichen				S3	3	39.3 ± 0.0	NB
N	*Cladonia carneola*	Crowned Pixie-cup Lichen				S3	2	58.2 ± 0.0	NB
N	*Cladonia deformis*	Lesser Sulphur-cup Lichen				S3	9	54.8 ± 0.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	10	24.6 ± 15.0	NB
N	*Ptychostomum inclinatum*	Blunt-tooth Thread Moss				S3?	1	95.7 ± 3.0	NS
N	*Dicranella rufescens*	Red Forklet Moss				S3?	1	64.9 ± 0.0	NB
N	*Rhytidiadelphus loreus*	Lanky Moss				S3?	3	64.3 ± 0.0	NB
N	*Sphagnum lescurii*	a Peatmoss				S3?	8	50.6 ± 1.0	NB
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3?	12	68.6 ± 0.0	PE
N	*Rostania occultata*	Crusted Tarpaper Lichen				S3?	4	79.5 ± 3.0	NS
N	*Stereocaulon subcoralloides*	Coralloid Foam Lichen				S3?	1	62.0 ± 1.0	NB
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3S4	1	46.6 ± 15.0	NB
N	*Brachytheciastrum velutinum*	Velvet Ragged Moss				S3S4	2	57.0 ± 1.0	NB
N	*Calliergon giganteum*	Giant Spear Moss				S3S4	1	84.4 ± 0.0	PE
N	*Dicranella cerviculata*	a Moss				S3S4	3	54.0 ± 2.0	NB
N	*Dicranella varia*	a Moss				S3S4	2	77.1 ± 0.0	PE
N	*Dicranum majus*	Greater Broom Moss				S3S4	22	50.5 ± 0.0	NB
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	2	31.8 ± 0.0	NB
N	*Encalypta ciliata*	Fringed Extinguisher Moss				S3S4	2	64.4 ± 0.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	4	53.9 ± 5.0	NB
N	*Elodium blandowii*	Blandow's Bog Moss				S3S4	1	84.3 ± 0.0	PE
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	6	35.8 ± 0.0	NB
N	*Isopterygiopsis muelleriana*	a Moss				S3S4	19	50.5 ± 0.0	NB
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	2	64.9 ± 0.0	NB
N	*Physcomitrium pyriforme*	Pear-shaped Urn Moss				S3S4	3	42.9 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	4	62.8 ± 0.0	NS
N	*Sphagnum compactum*	Compact Peat Moss				S3S4	6	42.3 ± 0.0	NB
N	*Sphagnum quinquefarium*	Five-ranked Peat Moss				S3S4	2	35.8 ± 0.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	2	63.8 ± 0.0	NB
N	*Sphagnum austinii*	Austin's Peat Moss				S3S4	1	58.7 ± 0.0	NS
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	1	63.8 ± 0.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	14	46.6 ± 15.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	2	79.8 ± 0.0	NB
N	*Weissia controversa*	Green-Cushioned Weissia				S3S4	1	65.2 ± 1.0	NB
N	*Abietinella abietina*	Wiry Fern Moss				S3S4	1	64.9 ± 0.0	NB
N	*Trichostomum tenuirostre*	Acid-Soil Moss				S3S4	4	57.4 ± 0.0	NB
N	*Rauiella scita*	Smaller Fern Moss				S3S4	1	74.6 ± 0.0	NB
N	*Pannaria rubiginosa*	Brown-eyed Shingle Lichen				S3S4	21	64.5 ± 1.0	NB
N	*Pseudocyphellaria holarctica*	Yellow Specklebelly Lichen				S3S4	87	19.3 ± 0.0	NB
N	*Ramalina thrausta*	Angelhair Ramalina Lichen				S3S4	13	49.0 ± 1.0	NB
N	*Hypogymnia vittata*	Slender Monk's Hood Lichen				S3S4	28	49.0 ± 1.0	NB
N	*Scytinium teretiusculum*	Curly Jellyskin Lichen				S3S4	11	76.0 ± 0.0	PE
N	*Montanelia panniformis*	Shingled Camouflage Lichen				S3S4	5	51.0 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	4	57.7 ± 1.0	NB
N	*Vahliella leucophaea*	Shelter Shingle Lichen				S3S4	18	28.8 ± 0.0	NB
N	*Xylopsora friesii*	a Lichen				S3S4	1	64.2 ± 1.0	NB
N	*Nephroma parile*	Powdery Kidney Lichen				S3S4	16	18.3 ± 0.0	NB
N	*Protopannaria pezizoides*	Brown-gray Moss-shingle Lichen				S3S4	26	28.0 ± 0.0	NB
N	*Usnea subrubicunda*	Reddish Beard Lichen				S3S4	2	80.0 ± 3.0	NS
N	*Stereocaulon paschale*	Easter Foam Lichen				S3S4	2	46.1 ± 1.0	NB
N	*Pannaria conoplea*	Mealy-rimmed Shingle Lichen				S3S4	39	52.6 ± 0.0	NB
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	6	58.9 ± 0.0	NB
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	72	40.2 ± 0.0	NB
N	*Peltigera neopolydactyla*	Undulating Pelt Lichen				S3S4	10	50.8 ± 1.0	NB
N	*Cladonia cariosa*	Lesser Ribbed Pixie Lichen				S3S4	4	45.4 ± 0.0	NB
N	*Hypocenomyce scalaris*	Common Clam Lichen				S3S4	1	62.0 ± 1.0	NB
N	*Dermatocarpon luridum*	Brookside Stippleback Lichen				S3S4	128	8.3 ± 0.0	NB
N	*Leucodon brachypus*	a Moss				SH	13	53.0 ± 1.0	NB
N	*Splachnum luteum*	Yellow Collar Moss				SH	1	64.1 ± 100.0	NB
N	*Thelia hirtella*	a Moss				SH	1	89.6 ± 100.0	NB
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				SH	3	58.1 ± 10.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	63	35.3 ± 1.0	NB
P	*Symphyotrichum laurentianum*	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	42	72.1 ± 0.0	NB
P	*Fraxinus nigra*	Black Ash	Threatened			S4S5	339	2.1 ± 0.0	NB
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	3	98.5 ± 0.0	NS
P	*Lechea maritima var. subcylindrica*	Beach Pinweed	Special Concern	Special Concern	Special Concern	S2	928	43.2 ± 0.0	NB
P	*Symphyotrichum subulatum (Bathurst pop)*	Bathurst Aster - Bathurst pop.	Not At Risk		Endangered	S2	21	56.4 ± 0.0	NB
P	*Cryptotaenia canadensis*	Canada Honewort				S1	2	66.0 ± 1.0	NB
P	*Sanicula trifoliata*	Large-Fruited Sanicle				S1	1	98.6 ± 5.0	NB
P	*Antennaria parlinii ssp. fallax*	Parlin's Pussytoes				S1	5	96.7 ± 1.0	NB
P	*Antennaria howellii ssp. petaloidea*	Pussy-Toes				S1	1	99.2 ± 5.0	PE
P	*Bidens discoidea*	Swamp Beggarticks				S1	1	78.8 ± 0.0	NB
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	28	47.5 ± 5.0	NB
P	*Hieracium paniculatum*	Panicled Hawkweed				S1	2	93.0 ± 0.0	NB
P	*Hieracium robinsonii*	Robinson's Hawkweed				S1	12	51.5 ± 0.0	NB
P	*Solidago multiradiata*	Multi-rayed Goldenrod				S1	19	31.9 ± 0.0	NB
P	*Symphyotrichum subulatum (non-Bathurst pop)*	Annual Saltmarsh Aster				S1	12	81.0 ± 0.0	NB
P	*Betula michauxii*	Michaux's Dwarf Birch				S1	3	96.4 ± 0.0	NB
P	*Barbarea orthoceras*	American Yellow Rocket				S1	1	74.6 ± 1.0	NB
P	*Cardamine parviflora*	Small-flowered Bittercress				S1	6	92.2 ± 0.0	NS
P	*Draba arabisans*	Rock Whitlow-Grass				S1	30	58.3 ± 0.0	NB
P	*Draba glabella*	Rock Whitlow-Grass				S1	7	64.6 ± 0.0	NB
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	3	29.2 ± 5.0	NB
P	*Chenopodiastrum simplex*	Maple-leaved Goosefoot				S1	6	31.3 ± 5.0	NB
P	*Blitum capitatum*	Strawberry-Blite				S1	2	91.3 ± 1.0	NB
P	*Suaeda rolandii*	Roland's Sea-Blite				S1	13	26.9 ± 1.0	NB
P	*Hypericum virginicum*	Virginia St. John's-wort				S1	2	61.8 ± 0.0	NS
P	*Corema conradii*	Broom Crowberry				S1	19	97.3 ± 0.0	PE
P	*Vaccinium boreale*	Northern Blueberry				S1	5	41.9 ± 1.0	NB
P	*Vaccinium corymbosum*	Highbush Blueberry				S1	1	61.4 ± 0.0	NS
P	*Euphorbia polygonifolia*	Seaside Spurge				S1	15	74.4 ± 10.0	NB
P	*Lespedeza capitata*	Round-headed Bush-clover				S1	11	89.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S1	2	79.2 ± 5.0	NS
P	*Polygonum douglasii*	Douglas Knotweed				S1	1	63.9 ± 0.0	NB
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	4	92.2 ± 0.0	NB
P	*Primula laurentiana*	Laurentian Primrose				S1	39	57.8 ± 3.0	NB
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S1	2	26.6 ± 1.0	NB
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	1	68.1 ± 1.0	NB
P	*Dryas integrifolia*	Entire-leaved Mountain Avens				S1	15	31.8 ± 3.0	NB
P	*Potentilla canadensis*	Canada Cinquefoil				S1	1	78.3 ± 0.0	NB
P	*Rubus flagellaris*	Northern Dewberry				S1	3	48.5 ± 1.0	NB
P	*Geum fragarioides*	Barren Strawberry				S1	1	48.7 ± 1.0	NB
P	*Salix myrtillifolia*	Blueberry Willow				S1	25	32.5 ± 0.0	NB
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S1	41	61.8 ± 0.0	NB
P	*Agalinis purpurea var. parviflora*	Small-flowered Purple False Foxglove				S1	58	29.7 ± 0.0	NB
P	*Carex annectens*	Yellow-Fruited Sedge				S1	3	37.0 ± 0.0	NB
P	*Carex atlantica ssp. atlantica*	Atlantic Sedge				S1	8	53.1 ± 0.0	NB
P	*Carex backii*	Rocky Mountain Sedge				S1	3	35.7 ± 0.0	NB
P	*Carex merritt-fernaldii*	Merritt Fernald's Sedge				S1	1	36.2 ± 0.0	NB
P	*Carex scirpoidea*	Scirpuslike Sedge				S1	6	68.1 ± 0.0	NB
P	*Carex sterilis*	Sterile Sedge				S1	1	35.4 ± 2.0	NB
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	12	67.1 ± 5.0	NB
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S1	18	91.4 ± 0.0	NB
P	*Scirpus pendulus*	Hanging Bulrush				S1	9	35.8 ± 0.0	NB
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S1	2	52.8 ± 0.0	NB
P	*Juncus greenei*	Greene's Rush				S1	9	50.9 ± 10.0	NB
P	*Juncus stygius ssp. americanus*	Moor Rush				S1	17	50.9 ± 10.0	NB
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S1	12	30.6 ± 5.0	NB
P	*Malaxis monophyllos var. brachypoda*	North American White Adder's-mouth				S1	3	85.9 ± 0.0	PE
P	*Malaxis monophyllos*	White Adder's-mouth				S1	1	28.7 ± 0.0	NB
P	*Platanthera flava*	Southern Rein-Orchid				S1	1	28.7 ± 0.0	NB
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S1	12	35.8 ± 0.0	NB
P	*Bromus pubescens*	Hairy Wood Brome Grass				S1	1	76.0 ± 0.0	NB
P	*Calamagrostis stricta ssp. inexpansa*	Slim-stemmed Reed Grass				S1	3	51.6 ± 1.0	NB
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1	3	92.9 ± 1.0	NB
P	*Danthonia compressa*	Flattened Oat Grass				S1	18	38.9 ± 0.0	NB
P	*Festuca subverticillata*	Nodding Fescue				S1	6	85.0 ± 0.0	NS
P	*Potamogeton friesii*	Fries' Pondweed				S1	7	45.6 ± 0.0	NB
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	1	95.1 ± 0.0	NB
P	*Potamogeton strictifolius*	Straight-leaved Pondweed				S1	1	97.7 ± 2.0	NB
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	1	66.8 ± 1.0	NB
P	*Dryopteris filix-mas ssp. brittonii*	Britton's Male Fern				S1	2	28.9 ± 1.0	NB
P	*Huperzia selago*	Northern Firmoss				S1	1	97.1 ± 1.0	NS
P	*Schizaea pusilla*	Little Curlygrass Fern				S1	9	57.5 ± 0.0	NB
P	*Bidens heterodoxa*	Connecticut Beggar-Ticks				S1?	2	85.7 ± 0.0	NB
P	*Cuscuta campestris*	Field Dodder				S1?	3	91.5 ± 5.0	NB
P	*Polygonum aviculare ssp. neglectum*	Narrow-leaved Knotweed				S1?	4	36.9 ± 0.0	NB
P	*Carex laxiflora*	Loose-Flowered Sedge				S1?	1	97.0 ± 7.0	NS
P	*Selaginella rupestris*	Rock Spikemoss				S1S2	9	60.6 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Coryphopteris simulata*	Bog Fern				S1S2	17	35.8 ± 0.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1S3	6	30.2 ± 0.0	NB
P	*Eriophorum russeolum ssp. albidum*	Smooth-fruited Russet Cottongrass				S1S3	13	15.0 ± 0.0	NB
P	*Spiranthes arcisepala*	Appalachian Ladies'-tresses				S1S3	7	44.6 ± 0.0	NB
P	*Spiranthes incurva*	Sphinx Ladies'-tresses				S1S3	1	7.2 ± 0.0	NB
P	*Neottia bifolia*	Southern Twayblade			Endangered	S2	50	14.2 ± 0.0	NB
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2	5	77.0 ± 1.0	NS
P	*Ionactis linariifolia*	Flax-leaved Aster				S2	26	70.5 ± 5.0	NB
P	*Symphyotrichum racemosum*	Small White Aster				S2	4	78.6 ± 0.0	NB
P	*Symphyotrichum subulatum*	Annual Saltmarsh Aster				S2	10	99.9 ± 0.0	NB
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S2	42	30.6 ± 5.0	NB
P	*Impatiens pallida*	Pale Jewelweed				S2	9	67.8 ± 0.0	NB
P	*Alnus serrulata*	Smooth Alder				S2	1	98.1 ± 0.0	NB
P	*Boechera stricta*	Drummond's Rockcress				S2	17	35.5 ± 0.0	NB
P	*Sagina nodosa*	Knotted Pearlwort				S2	2	96.7 ± 0.0	PE
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S2	2	96.5 ± 0.0	PE
P	*Stellaria longifolia*	Long-leaved Starwort				S2	10	36.5 ± 2.0	NB
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S2	4	36.4 ± 0.0	NB
P	*Oxybasis rubra*	Red Goosefoot				S2	11	34.0 ± 0.0	NB
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2	3	62.0 ± 1.0	NB
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2	7	22.8 ± 0.0	NB
P	*Viburnum lentago*	Nannyberry				S2	1	56.7 ± 0.0	NB
P	*Viburnum recognitum*	Northern Arrow-Wood				S2	1	37.9 ± 0.0	NB
P	*Shepherdia canadensis*	Soapberry				S2	42	28.1 ± 0.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	27	87.3 ± 0.0	NB
P	*Quercus macrocarpa*	Bur Oak				S2	37	65.4 ± 0.0	NB
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2	1	47.6 ± 50.0	NB
P	*Myriophyllum humile*	Low Water Milfoil				S2	1	54.1 ± 1.0	NB
P	*Proserpinaca palustris*	Marsh Mermaidweed				S2	1	80.6 ± 0.0	NB
P	*Hedeoma pulegioides*	American False Pennyroyal				S2	3	64.2 ± 0.0	NB
P	*Nuphar x rubrodisca*	Red-disk Yellow Pond-lily				S2	16	8.9 ± 0.0	NB
P	*Aphyllon uniflorum*	One-flowered Broomrape				S2	1	99.4 ± 1.0	NB
P	*Polygaloides paucifolia*	Fringed Milkwort				S2	8	59.0 ± 1.0	NB
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	15	78.3 ± 0.0	NB
P	*Persicaria careyi*	Carey's Smartweed				S2	11	36.5 ± 2.0	NB
P	*Anemone parviflora*	Small-flowered Anemone				S2	9	32.8 ± 0.0	NB
P	*Hepatica americana*	Round-lobed Hepatica				S2	1	81.2 ± 1.0	NB
P	*Ranunculus flabellaris*	Yellow Water Buttercup				S2	1	19.7 ± 0.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S2	7	51.3 ± 1.0	NB
P	*Crataegus succulenta*	Fleshy Hawthorn				S2	2	78.3 ± 0.0	PE
P	*Cephalanthus occidentalis*	Common Buttonbush				S2	1	99.0 ± 0.0	NB
P	*Agalinis neoscotica*	Nova Scotia Agalinis				S2	1	57.7 ± 0.0	NS
P	*Euphrasia randii*	Rand's Eyebright				S2	7	66.1 ± 0.0	NB
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S2	2	64.0 ± 1.0	NB
P	*Dirca palustris*	Eastern Leatherwood				S2	1	23.3 ± 1.0	NB
P	*Sagittaria montevidensis ssp. spongiosa*	Spongy Arrowhead				S2	86	45.6 ± 0.0	NB
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S2	128	55.7 ± 18.0	NB
P	*Carex comosa*	Bearded Sedge				S2	7	51.6 ± 0.0	NB
P	*Carex granularis*	Limestone Meadow Sedge				S2	11	37.0 ± 0.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S2	1	64.0 ± 1.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S2	8	22.9 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Carex livida*	Livid Sedge				S2	9	57.9 ± 0.0	NS
P	*Carex plantaginea*	Plantain-Leaved Sedge				S2	3	65.6 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2	3	55.4 ± 0.0	NB
P	*Carex sprengelii*	Longbeak Sedge				S2	2	70.5 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S2	9	33.7 ± 10.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	14	11.2 ± 0.0	NB
P	*Cyperus squarrosus*	Awned Flatsedge				S2	16	86.8 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S2	51	32.2 ± 0.0	NB
P	*Blysmopsis rufa*	Red Bulrush				S2	32	64.1 ± 0.0	NB
P	*Juncus vaseyi*	Vasey Rush				S2	12	8.4 ± 0.0	NB
P	*Allium tricoccum*	Wild Leek				S2	18	26.3 ± 0.0	NB
P	*Galearis rotundifolia*	Small Round-leaved Orchid				S2	3	53.4 ± 0.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	3	30.4 ± 5.0	NB
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S2	7	25.7 ± 10.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	2	23.6 ± 0.0	NB
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S2	2	84.8 ± 0.0	PE
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	6	31.3 ± 1.0	NB
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S2	16	3.6 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	1	75.5 ± 0.0	NB
P	*Elymus canadensis*	Canada Wild Rye				S2	1	3.7 ± 1.0	NB
P	*Piptatheropsis canadensis*	Canada Ricegrass				S2	4	13.1 ± 10.0	NB
P	*Puccinellia phryganodes ssp. neoarctica*	Creeping Alkali Grass				S2	2	46.4 ± 1.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2	23	60.2 ± 0.0	NB
P	*Puccinellia nutkaensis*	Alaska Alkaligrass				S2	2	35.3 ± 1.0	NB
P	*Schizachyrium scoparium*	Little Bluestem				S2	30	79.3 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Eastern Wild Rice				S2	7	47.8 ± 0.0	NB
P	*Piptatheropsis pungens*	Slender Ricegrass				S2	5	35.4 ± 0.0	NB
P	*Potamogeton vaseyi*	Vasey's Pondweed				S2	1	72.3 ± 0.0	PE
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S2	12	35.9 ± 1.0	NB
P	*Anchistea virginica*	Virginia chain fern				S2	28	60.9 ± 0.0	NS
P	*Woodsia alpina*	Alpine Cliff Fern				S2	5	51.5 ± 0.0	NB
P	*Diphasiastrum sitchense*	Sitka Ground-cedar				S2	4	37.1 ± 0.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S2	8	60.2 ± 0.0	NB
P	*Toxicodendron radicans var. radicans*	Eastern Poison Ivy				S2?	12	43.7 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	5	54.6 ± 1.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	2	52.2 ± 5.0	NB
P	*Crataegus macrosperma*	Big-Fruit Hawthorn				S2?	2	14.2 ± 0.0	NB
P	*Rubus x recurvicaulis*	arching dewberry				S2?	6	28.5 ± 1.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2?	10	27.9 ± 10.0	NB
P	*Salix myricoides*	Bayberry Willow				S2?	2	32.4 ± 1.0	NB
P	*Carex vacillans*	Estuarine Sedge				S2?	4	53.5 ± 7.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2?	4	58.1 ± 0.0	NB
P	*Solidago altissima*	Tall Goldenrod				S2S3	3	46.8 ± 0.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2S3	7	46.3 ± 0.0	NB
P	*Elatine americana*	American Waterwort				S2S3	7	47.1 ± 0.0	NB
P	*Bartonia paniculata*	Branched Bartonia				S2S3	2	64.7 ± 0.0	NS
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S2S3	24	53.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Geranium robertianum*	Herb Robert				S2S3	90	50.6 ± 0.0	NB
P	*Myriophyllum quitense*	Andean Water Milfoil				S2S3	5	97.7 ± 0.0	NB
P	*Epilobium coloratum*	Purple-veined Willowherb				S2S3	19	42.9 ± 0.0	NB
P	*Rumex persicarioides*	Peach-leaved Dock				S2S3	3	7.6 ± 1.0	NB
P	*Rumex pallidus*	Seabeach Dock				S2S3	7	47.0 ± 0.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S2S3	30	20.8 ± 0.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S2S3	14	22.9 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S2S3	14	7.0 ± 10.0	NB
P	*Scirpus atrovirens*	Dark-green Bulrush				S2S3	1	73.6 ± 0.0	PE
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	14	9.9 ± 10.0	NB
P	*Corallorhiza maculata var. maculata*	Spotted Coralroot				S2S3	4	55.8 ± 0.0	NB
P	*Neottia auriculata*	Auricled Twayblade				S2S3	1	61.6 ± 0.0	NB
P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S2S3	21	36.1 ± 0.0	NB
P	*Eragrostis pectinacea*	Tufted Love Grass				S2S3	6	6.8 ± 1.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	2	34.7 ± 1.0	NB
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	11	57.6 ± 0.0	NS
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	5	56.4 ± 1.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	35	12.5 ± 0.0	NB
P	*Artemisia campestris ssp. caudata*	Tall Wormwood				S3	83	53.8 ± 0.0	NB
P	*Artemisia campestris*	Field Wormwood				S3	10	66.1 ± 0.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3	45	27.9 ± 1.0	NB
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	98	29.0 ± 1.0	NB
P	*Nabalus racemosus*	Glaucous Rattlesnakeroot				S3	26	79.0 ± 0.0	NB
P	*Tanacetum bipinnatum ssp. huronense*	Lake Huron Tansy				S3	11	99.2 ± 0.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3	12	22.7 ± 0.0	NB
P	*Betula pumila*	Bog Birch				S3	121	14.2 ± 0.0	NB
P	*Turritis glabra*	Tower Mustard				S3	1	74.1 ± 0.0	NB
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S3	12	29.4 ± 0.0	NB
P	*Cardamine maxima*	Large Toothwort				S3	30	74.2 ± 0.0	NB
P	*Subularia aquatica ssp. americana*	American Water Awlwort				S3	2	54.9 ± 0.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	15	29.3 ± 5.0	NB
P	*Ceratophyllum echinatum*	Prickly Hornwort				S3	36	9.9 ± 0.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	398	37.4 ± 0.0	NB
P	*Cornus obliqua*	Silky Dogwood				S3	71	57.2 ± 0.0	NB
P	*Crassula aquatica*	Water Pygmyweed				S3	6	47.2 ± 0.0	NB
P	*Rhodiola rosea*	Roseroot				S3	90	56.6 ± 0.0	NB
P	*Penthorum sedoides*	Ditch Stonecrop				S3	34	19.8 ± 0.0	NB
P	*Elatine minima*	Small Waterwort				S3	2	55.4 ± 0.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	28	4.6 ± 5.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	9	47.3 ± 0.0	NB
P	*Myriophyllum heterophyllum*	Variable-leaved Water Milfoil				S3	25	79.0 ± 0.0	NB
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	16	46.9 ± 0.0	NB
P	*Teucrium canadense*	Canada Germander				S3	125	27.8 ± 0.0	NB
P	*Nuphar microphylla*	Small Yellow Pond-lily				S3	6	46.2 ± 0.0	NB
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	5	61.4 ± 0.0	NB
P	*Epilobium hornemannii ssp. hornemannii*	Hornemann's Willowherb				S3	1	61.3 ± 0.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3	29	21.9 ± 0.0	NB
P	*Polygala sanguinea*	Blood Milkwort				S3	65	24.0 ± 5.0	NB
P	*Persicaria arifolia*	Halberd-leaved Tearthumb				S3	141	15.0 ± 0.0	NB
P	*Persicaria punctata*	Dotted Smartweed				S3	28	39.5 ± 0.0	NB
P	*Fallopia scandens*	Climbing False Buckwheat				S3	77	17.1 ± 0.0	NB
P	*Littorella americana*	American Shoreweed				S3	4	95.3 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Samolus parviflorus*	Seaside Brookweed				S3	140	23.9 ± 0.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	6	51.3 ± 1.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	16	35.0 ± 0.0	NB
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	51	10.5 ± 1.0	NB
P	*Thalictrum confine*	Northern Meadow-rue				S3	8	83.2 ± 0.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	20	31.3 ± 0.0	NB
P	*Rosa palustris*	Swamp Rose				S3	8	51.4 ± 0.0	NB
P	*Rubus occidentalis*	Black Raspberry				S3	5	40.9 ± 0.0	NB
P	*Sanguisorba canadensis*	Canada Burnet				S3	19	58.0 ± 0.0	NB
P	*Galium boreale*	Northern Bedstraw				S3	5	61.9 ± 0.0	NB
P	*Salix nigra*	Black Willow				S3	54	64.7 ± 0.0	NB
P	*Salix pedicellaris*	Bog Willow				S3	66	25.9 ± 0.0	NB
P	*Salix interior*	Sandbar Willow				S3	1	26.4 ± 1.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	51	30.1 ± 0.0	NB
P	*Limosella australis*	Southern Mudwort				S3	87	23.9 ± 0.0	NB
P	*Pilea pumila*	Dwarf Clearweed				S3	70	20.2 ± 0.0	NB
P	*Viola adunca*	Hooked Violet				S3	7	36.1 ± 0.0	NB
P	*Viola nephrophylla*	Northern Bog Violet				S3	14	53.9 ± 0.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	14	31.2 ± 5.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3	20	60.0 ± 0.0	NB
P	*Carex chordorrhiza*	Creeping Sedge				S3	74	47.2 ± 0.0	NB
P	*Carex conoidea*	Field Sedge				S3	10	37.1 ± 0.0	NB
P	*Carex eburnea*	Bristle-leaved Sedge				S3	18	34.6 ± 100.0	NB
P	*Carex exilis*	Coastal Sedge				S3	6	66.6 ± 0.0	NS
P	*Carex garberi*	Garber's Sedge				S3	1	33.7 ± 0.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3	21	10.4 ± 0.0	NB
P	*Carex lupulina*	Hop Sedge				S3	27	19.8 ± 0.0	NB
P	*Carex michauxiana*	Michaux's Sedge				S3	17	46.2 ± 1.0	NB
P	*Carex ormostachya*	Necklace Spike Sedge				S3	6	20.7 ± 1.0	NB
P	*Carex rosea*	Rosy Sedge				S3	23	61.6 ± 0.0	NB
P	*Carex tenera*	Tender Sedge				S3	23	6.6 ± 0.0	NB
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	30	28.7 ± 0.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3	177	12.6 ± 0.0	NB
P	*Carex recta*	Estuary Sedge				S3	17	25.1 ± 0.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3	3	90.1 ± 0.0	NS
P	*Cyperus dentatus*	Toothed Flatsedge				S3	126	53.6 ± 1.0	NB
P	*Cyperus esculentus var. leptostachyus*	Perennial Yellow Nutsedge				S3	28	40.7 ± 0.0	NB
P	*Eleocharis intermedia*	Matted Spikerush				S3	1	51.9 ± 0.0	NB
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3	2	72.1 ± 1.0	NB
P	*Rhynchospora fusca*	Brown Beakrush				S3	12	53.7 ± 0.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3	25	61.3 ± 0.0	NB
P	*Bolboschoenus fluviatilis*	River Bulrush				S3	7	29.6 ± 1.0	NB
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S3	8	10.3 ± 0.0	NB
P	*Lemna trisulca*	Star Duckweed				S3	26	17.8 ± 0.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	37	22.5 ± 0.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3	33	9.4 ± 0.0	NB
P	*Platanthera blephariglottis*	White Fringed Orchid				S3	603	10.9 ± 0.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	47	18.2 ± 1.0	NB
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	28	17.1 ± 0.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3	32	17.4 ± 0.0	NB
P	*Dichanthelium depauperatum*	Starved Panic Grass				S3	31	41.8 ± 0.0	NB
P	*Heteranthera dubia*	Water Stargrass				S3	5	93.2 ± 0.0	NB
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	36	21.4 ± 0.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	6	87.9 ± 0.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3	242	10.3 ± 0.0	NB
P	*Zannichellia palustris*	Horned Pondweed				S3	48	23.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	1	81.2 ± 1.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3	1	91.8 ± 0.0	NB
P	*Asplenium viride*	Green Spleenwort				S3	17	35.9 ± 1.0	NB
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3	81	50.1 ± 0.0	NB
P	*Woodsia glabella*	Smooth Cliff Fern				S3	67	50.3 ± 0.0	NB
P	*Isoetes tuckermanii ssp. tuckermanii*	Tuckerman's Quillwort				S3	4	53.7 ± 0.0	NB
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3	17	35.7 ± 0.0	NB
P	*Huperzia appressa*	Mountain Firmoss				S3	46	61.5 ± 0.0	NB
P	*Sceptridium dissectum*	Dissected Moonwort				S3	9	32.4 ± 1.0	NB
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S3	18	28.2 ± 5.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	6	45.6 ± 0.0	NB
P	*Polypodium appalachianum*	Appalachian Polypody				S3	30	32.6 ± 1.0	NB
P	*Crataegus submollis*	Quebec Hawthorn				S3?	5	92.9 ± 1.0	NB
P	*Mertensia maritima*	Sea Lungwort				S3S4	8	49.5 ± 0.0	NB
P	*Lobelia kalmii*	Brook Lobelia				S3S4	2	88.7 ± 10.0	NB
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	37	8.7 ± 0.0	NB
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	8	60.8 ± 0.0	NS
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	2	94.8 ± 0.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	3	48.0 ± 0.0	NB
P	*Rumex fueginus*	Tierra del Fuego Dock				S3S4	110	6.8 ± 0.0	NB
P	*Rubus chamaemorus*	Cloudberry				S3S4	160	12.6 ± 0.0	NB
P	*Geocaulon lividum*	Northern Comandra				S3S4	43	18.2 ± 0.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	25	26.7 ± 1.0	NB
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	7	49.2 ± 1.0	NB
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	317	14.3 ± 0.0	NB
P	*Eriophorum russeolum ssp. russeolum*	Russet Cottongrass				S3S4	53	34.2 ± 0.0	NB
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	70	37.9 ± 0.0	NB
P	*Spirodela polyrhiza*	Great Duckweed				S3S4	19	46.2 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	25	31.8 ± 0.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	31	28.5 ± 2.0	NB
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S3S4	15	52.9 ± 0.0	NB
P	*Distichlis spicata*	Salt Grass				S3S4	92	27.0 ± 5.0	NB
P	*Potamogeton oakesianus*	Oakes' Pondweed				S3S4	14	20.1 ± 0.0	NB
P	*Montia fontana*	Water Blinks				SH	4	28.6 ± 1.0	NB
P	*Brachyelytrum erectum*	Bearded Shorthusk				SH	2	36.5 ± 2.0	NB
P	*Agalinis maritima*	Saltmarsh Agalinis				SX	2	67.3 ± 50.0	NB

5.1 SOURCE BIBLIOGRAPHY (100 km)

The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
16411	Epworth, W. 2016. Species at Risk records, 2014-2016. Fort Folly Habitat Recovery Program, 38 recs.
11310	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
6102	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
6073	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
3265	Pardieck, K.L., Ziolkowski Jr., D.J., Lutmerding, M., Aponte, V.I., and Hudson, M-A.R. 2020. North American Breeding Bird Survey Dataset 1966 - 2019: U.S. Geological Survey data release, https://doi.org/10.5066/P9J6QUF6
3223	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
2027	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
1789	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.

# recs	CITATION
1719	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
864	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
775	Chapman-Lam, C.J. 2021. Atlantic Canada Conservation Data Centre 2020 botanical fieldwork. Atlantic Canada Conservation Data Centre, 17309 recs.
733	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
654	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
520	Blaney, C.S. 2020. Sean Blaney 2020 field data. Atlantic Canada Conservation Data Centre, 4407 records.
456	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
452	Gravel, Mireille. 2010. Coordonnées GPS et suivi des tortues marquées, 2005-07. Kouchibouguac National Park, 480 recs.
435	Beaudet, A. 2007. Piping Plover Records in Kouchibouguac NP, 1982-2005. Kouchibouguac National Park, 435 recs.
434	Stantec. 2014. Energy East Pipeline Corridor Species Occurrence Data. Stantec Inc., 4934 records.
374	Mazerolle, D.M. 2021. South Richibucto Dune Beach pinweed observations from 2019. Parks Canada, 387 records.
355	Amirault, D.L. & Stewart, J. 2007. Piping Plover Database 1894-2006. Canadian Wildlife Service, Sackville, 3344 recs, 1228 new.
322	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
316	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
313	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
305	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
273	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
271	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
271	Belliveau, A.G. 2020. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2019, 2020. E.C. Smith Herbarium.
221	Blaney, C.S. & Mazerolle, D.M. 2011. Field data from NCC properties at Musquash Harbour NB & Goose Lake NS. Atlantic Canada Conservation Data Centre, 1739 recs.
202	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
201	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
201	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
197	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
196	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
193	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
191	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
190	Porter, Caitlin. 2021. Field data for 2020 in various locations across the Maritimes. Atlantic Canada Conservation Data Centre, 3977 records.
190	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. https://doi.org/10.1037/arc0000014.
184	Blaney, C.S. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 6719 recs.
180	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
178	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
178	Paquet, Julie. 2019. Atlantic Canada Shorebird Survey ACSS database for 2019. Environment Canada, Canadian Wildlife Service.
177	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
170	MacDonald, E.C. 2018. Piping Plover nest records from 2010-2017. Canadian Wildlife Service.
162	Epworth, W. 2012. Species at Risk records, 2009-11. Fort Folly Habitat Recovery Program, 162 recs.
161	Parks Canada. 2010. Specimens in or near National Parks in Atlantic Canada. Canadian National Museum, 3925 recs.
149	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
146	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
136	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
122	Mazerolle, D.M. 2005. Bouctouche Irving Eco-Centre rare coastal plant fieldwork results 2004-05. Irving Eco-centre, la Dune du Bouctouche, 174 recs.
121	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
121	Blaney, C.S.; Mazerolle, D.M.; Klymko, J; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
119	Churchill, J.L.; Klymko, J.D. 2015. Chignecto and Tintamarre National Wildlife Area Bird Surveys 2015. Atlantic Canada Conservation Data Centre, 2238 recs.
119	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
119	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick, 2002-09. Canadian Wildlife Service, Sackville, 58 recs.
117	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre, 907 recs.
111	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
105	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
104	Clayden, S. Digitization of Wolfgang Maass Nova Scotia forest lichen collections, 1964-2004. New Brunswick Museum. 2018.
104	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
103	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
102	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
94	Mazerolle, David. 2020. Botanical fieldwork 2020. Parks Canada.
94	Tremblay, E. 2006. Kouchibouguac National Park Digital Database. Parks Canada, 105 recs.
93	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
92	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
90	Benjamin, L.K. (compiler). 2012. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 4965 recs.
89	Sollows, M.C,. 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).

# recs	CITATION
86	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
85	Blaney, C.S. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre.
83	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
80	Honeyman, K. 2019. Unique Areas Database, 2018. J.D. Irving Ltd.
80	MacDonald, E.C. 2018. CWS Piping Plover Census, 2010-2017. Canadian Wildlife Service, 672 recs.
80	Spicer, C.D. & Harries, H. 2001. Mount Allison Herbarium Specimens. Mount Allison University, 128 recs.
79	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
78	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
77	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
70	Neily, T.H. 2017. Maritmes Lichen and Bryophyte records. Atlantic Canada Conservation Data Centre, 1015 recs.
67	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
63	Richardson, Leif. 2018. Maritimes Bombus records from various sources. Richardson, Leif.
62	Churchill, J.L.; Walker, J. 2017. Species at Risk Surveys at Correctional Services Canada Properties in Nova Scotia and New Brunswick. Atlantic Canada Conservation Data Centre.
60	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
59	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
58	Askanas, H. 2016. New Brunswick Wood Turtle Database. New Brunswick Department of Energy and Resource Development.
58	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
58	Klymko, J. 2020. Atlantic Canada Conservation Data Centre zoological fieldwork 2019. Atlantic Canada Conservation Data Centre.
57	Belliveau, A.G., Churchill, J.L. 2019. Compilation of flora and fauna observation records from Isle Haute, Nova Scotia. Acadia University; Atlantic Canada Conservation Data Centre, 522 recs.
56	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
56	Klymko, J. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
55	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
55	Neily, Tom. 2020. Lichen surveys for PEI Forested Landscapes Priority Place. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 158 records.
54	Haughian, S.R. 2018. Description of Fuscopannaria leucosticta field work in 2017. New Brunswick Museum, 314 recs.
49	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
49	Catling, P.M., Erskine, D.S. & MacLaren, R.B. 1985. The Plants of Prince Edward Island with new records, nomenclatural changes & corrections & deletions, 1st Ed. Research Branch, Agriculture Canada, Ottawa, Publication 1798. 22pp.
46	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
46	MacDonald, M. 2008. PEI Power Corridor Floral Surveys, 2004-08. Jacques Whitford Ltd, 2238 recs (979 rare).
45	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
45	Mazerolle, D.M. 2020. Atlantic Canada Conservation Data Centre botanical fieldwork 2019. Atlantic Canada Conservation Data Centre.
45	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
41	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
41	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.
41	Wissink, R. 2006. Fundy National Park Digital Database. Parks Canada, 41 recs.
40	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
39	Goltz, J.P. 2012. Field Notes, 1989-2005. , 1091 recs.
39	Majka, C. 2009. Université de Moncton Insect Collection: Carabidae, Cerambycidae, Coccinellidae. Université de Moncton, 540 recs.
38	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
38	Thomas, P. 2018. CSC Dorchester Bobolink Survey. Environment Canada, Canadian Wildlife Service.
37	Allen, K. 2012. Rare plant spatial data from Pleasant Ridge cranberry farm. NB Deparment of Environment, Environmental Assessment Section, 39 recs.
37	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
36	Blaney, C.S & Spicer, C.D.; Popma, T.M.; Basquill, S.P. 2003. Vascular Plant Surveys of Northumberland Strait Rivers & Amherst Area Peatlands. Nova Scotia Museum Research Grant, 501 recs.
36	Wallace, S. 2020. Stewardship Department species occurrence data on NTNB preserves. Nature Trust of New Brunswick.
35	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
34	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
34	Donell, R. 2008. Rare plant records from rare coastal plant project. Bouctouche Dune Irving Eco-centre. Pers. comm. to D.M. Mazerolle, 50 recs.
34	Robinson, S.L. 2010. Fieldwork 2009 (dune ecology). Atlantic Canada Conservation Data Centre. Sackville NB, 408 recs.
33	Klymko, J. 2021. Atlantic Canada Conservation Data Centre zoological fieldwork 2020. Atlantic Canada Conservation Data Centre.
33	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
31	Jobin, C. & Clow, A., Van Dijk, J. 2019. Eastern Waterfan data, Mount Allison Fundy Field Camp 2019. Chapman, C.J. (ed.) Fundy National Park and Mount Allison University, 31 recs.
31	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
30	Cowie, F. 2007. Electrofishing Population Estimates 1979-98. Canadian Rivers Institute, 2698 recs.
29	Island Nature Trust. 2016. Farmland birds project. Mader, Shannon (ed.) .
29	Robinson, S.L. 2015. 2014 field data.
28	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
28	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
26	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
26	Coursol, F. 2005. Dataset from New Brunswick fieldwork for Eriocaulon parkeri COSEWIC report. Coursol, Pers. comm. to C.S. Blaney, Aug 26. 110 recs.

# recs	CITATION
26	Sabine, D.L. 2005. 2001 Freshwater Mussel Surveys. New Brunswick Dept of Natural Resources & Energy, 590 recs.
25	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
24	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
24	Tingley, S. (compiler). 2001. Butterflies of New Brunswick. , Web site: www.geocities.com/Yosemite/8425/buttrfly. 142 recs.
23	Chiasson, R. 2018. Breeding bird observations from NBWTF project. pers. comm. to S. Blaney.
23	Epworth, W. 2013. Species at Risk records, 2013. Fort Folly Habitat Recovery Program, 27 recs.
22	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
21	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
20	Beardmore, T. 2017. 2017 Butternut observations. Natural Resources Canada.
20	Kouchibouguac National Park, Natural Resource Conservation Sec. 1988. The Resources of Kouchibouguac National Park. Beach, H. (ed.) , 90 recs.
20	Mazerolle, M.J., Drolet, B., & Desrochers, A. 2001. Small Mammal Responses to Peat Mining of Southeastern Canadian Bogs. Can. J. Zool., 79:296-302. 21 recs.
19	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.
18	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
18	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
17	Mazerolle, D. 2003. Assessment of Seaside Pinweed (Lechea maritima var. subcylindrica) in Southeastern New Brunswick. Irving Eco-centre, la Dune du Bouctouche, 18 recs.
17	McAlpine, D.F. 1998. NBM Science Collections: Wood Turtle records. New Brunswick Museum, Saint John NB, 329 recs.
17	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
17	Wood Turtle (Glyptemys insculpta) Miramichi Watershed Synopsis 2013 Compiled by: Vladimir King Trajkovic, EPt Miramichi River Environmental Assessment Committee
16	Arsenault, M. 2019. Cormorant colony nest counts. PE Department of Communities, Land, and Environment.
16	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
16	Caissie, A. Herbarium Records. Fundy National Park, Alma NB. 1961-1993.
16	Doucet, D.A. & Edsall, J.; Brunelle, P.-M. 2007. Miramichi Watershed Rare Odonata Survey. New Brunswick ETF & WTF Report, 1211 recs.
16	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
16	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
15	Belland, R.J. 1992. The Bryophytes of Kouchibouguac National Park. Parks Canada, Kouchibouguac NP, 101 pp. + map.
15	Curley, F.R. 2005. PEF&W Collection 2003-04. PEI Fish & Wildlife Div., 716 recs.
15	Edsall, J. 2001. Lepidopteran records in New Brunswick, 1997-99. , Pers. comm. to K.A. Bredin. 91 recs.
15	Klymko, J.J.D. 2016. 2014 field data. Atlantic Canada Conservation Data Centre.
15	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
14	Churchill, J.L., Klymko, J.D.D. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
14	Morton, L.D. & Savoie, M. 1983. The Mammals of Kouchibouguac National Park. Parks Canada Report prep. by Canadian Wildlife Service, Sackville, NB, Vols 1-4. 14 recs.
14	NatureServe Canada. 2018. iNaturalist Butterfly Data Export . iNaturalist.org and iNaturalist.ca.
13	Wissink, R. 2000. Rare Plants of Fundy: maps. Parks Canada, 20 recs.
12	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
12	McAlpine, D.F. 1983. Status & Conservation of Solution Caves in New Brunswick. New Brunswick Museum, Publications in Natural Science, no. 1, 28pp.
12	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
12	Walker, J. 2017. Bird inventories at French River, NS, and Memramcook, NB, for Nature Conservancy of Canada. Pers. comm. to AC CDC.
12	Webster, R.P. 2004. Lepidopteran Records for National Wildlife Areas in New Brunswick. Webster, 1101 recs.
11	Bredin, K.A. 2001. WTF Project: Freshwater Mussel Fieldwork in Freshwater Species data. Atlantic Canada Conservation Data Centere, 101 recs.
11	Canadian Wildlife Service, Atlantic Region. 2010. Piping Plover censuses 2006-09. , 35 recs.
11	Eaton, S. 2014. Nova Scotia Wood Turtle Database. Environment and Climate Change Canada, 4843 recs.
11	Gagnon, J. 2004. Specimen data from 2002 visit to Prince Edward Island. , 104 recs.
11	Webster, R.P. & Edsall, J. 2007. 2005 New Brunswick Rare Butterfly Survey. Environmental Trust Fund, unpublished report, 232 recs.
11	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
10	Bateman, M.C. 2000. Waterfowl Brood Surveys Database, 1990-2000 . Canadian Wildlife Service, Sackville, unpublished data. 149 recs.
10	Doucet, D.A. & Edsall, J. 2007. Ophiogomphus howei records. Atlantic Canada Conservation Data Centre, Sackville NB, 21 recs.
10	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 recs.
10	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
10	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
10	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2009. New Brunswick Dept Natural Resources, 19 recs (14 active).
10	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
10	McMullin, R.T. 2015. Prince Edward Island's lichen biodiversity and proposed conservation status in a report prepared for the province of PEI. Biodiversity Institute of Ontario Herbarium, University of Guelph, 776 records.
10	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
10	Richardson, D., Anderson, F., Cameron, R, McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (Anzia colpodes). COSEWIC.
10	Tremblay, E. 2001. Kouchibouguacis River Freshwater Mussel Data. Parks Canada, Kouchibouguac NP, 45 recs.

# recs	CITATION
9	Amirault, D.L. 2000. Piping Plover Surveys, 1983-2000. Canadian Wildlife Service, Sackville, unpublished data. 70 recs.
9	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2000.
9	Godbout, V. 2002. SAR Inventory: Birds in Fort Beauséjour NHS. Parks Canada, Atlantic, SARINV02-01. 202 recs.
9	Hall, R.A. 2001. S.. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
9	Hinds, H.R. 1997. Vascular Plants of Cocagne Island. Connell Herbarium, UNB.
9	Mawhinney, K. & Seutin, G. 2001. Lepidoptera Survey of the Salt Marshes of of Kouchibouguac National Park. Parks Canada Unpublished Report, 5p. 9 recs.
9	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
9	Nature Trust of New Brunswick. 2021. Nature Trust of New Brunswick site inventory data submitted in April 2021. Nature Trust of New Brunswick, 2189 records.
8	Cowie, Faye. 2007. Surveyed Lakes in New Brunswick. Canadian Rivers Institute, 781 recs.
8	Hinds, H.R. 1992. Rare Vascular Plants of Fundy National Park. , 10 recs.
8	King, Amelia. 2020. Belleisle Watershed Coalition Turtle Watch Data. Belleisle Watershed Coalition.
8	Native Council of Prince Edward Island. 2019. Bat species and Bank Swallow observations at St. Chrysostome Wildlife Management Area, PEI. Native Council of Prince Edward Island.
8	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
8	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
8	Trajkovic, V.K. 2017. Wood turtles inventroy miramichi watershed 2017. Miramichi River Environmental Action Committee, 22 records.
8	Webster, R.P. 2006. Survey for Suitable Salt Marshes for the Maritime Ringlet, New Populations of the Cobblestone Tiger Beetle, & New Localities of Three Rare Butterfly Species. New Brunswick WTF Report, 28 recs.
8	Westwood, A., Staicer, C. 2016. Nova Scotia landbird Species at Risk observations. Dalhousie University.
8	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
7	e-Butterfly. 2019. Export of Maritimes records and photos. McFarland, K. (ed.) e-butterfly.org.
7	Erskine, D. 1960. The plants of Prince Edward Island, 1st Ed. Research Branch, Agriculture Canada, Ottawa., Publication 1088. 1238 recs.
7	Glen, W. 1991. 1991 Prince Edward Island Forest Biomass Inventory Data. PEI Dept of Energy and Forestry, 10059 recs.
7	Holder, M.L.; Kingsley, A.L. 2000. Kinglsey and Holder observations from 2000 field work.
7	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
7	Shortt, R. Connell Herbarium Black Ash specimens. University New Brunswick, Fredericton. 2019.
7	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.
6	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
6	Elward, D. 2017. 2015-2016 Freshwater Mussel Inventories in the Bouctouche Watershed. Southeastern Anglers Association, 6 recs.
6	Gowan, S. 1980. The Lichens of Kouchibouguac National Park, Parts I (Macrolichens) & II (Microlichens). National Museum of Natural Sciences. Ottawa, ON, 7 recs.
6	Harris, P. 2004. Plant records from 1997-2003. Island Nature Trust, Charlottetown PE, 71 recs.
6	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
6	Morrison, Annie. 2010. NCC Properties Fieldwork: June-August 2010. Nature Conservancy Canada, 508 recs.
6	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
5	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
5	Basset, I.J. & Crompton, C.W. 1978. The Genus Suaeda (Chenopodiaceae) in Canada. Canadian Journal of Botany, 56: 581-591.
5	Bastien, D. 2017. Rare Peatland plant observations. Pers. comm. to H. Askanas, New Brunswick Department of Energy and Resource Development.
5	Burns, L. 2013. Personal communication concerning bat occurrence on PEI. Winter 2013. Pers. comm.
5	Carter, Jeff; Churchill, J.; Churchill, I.; Churchill, L. 2020. Bank Swallow colony Scots Bay, NS. Atlantic Canada Conservation Data Centre.
5	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
5	Churchill, J.L. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
5	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (Pseudevernia cladonia). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
5	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2011. Atlantic Canada Conservation Data Centre. Sackville NB, 760 recs.
5	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
5	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database [as of 2018-03]. Mersey Tobeatic Research Institute.
5	Sabine, D.L. 2013. Dwaine Sabine butterfly records, 2009 and earlier.
4	Daury, R.W. & Bateman, M.C. 1996. The Barrow's Goldeneye (Bucephala islandica) in the Atlantic Provinces and Maine. Canadian Wildlife Service, Sackville, 47pp.
4	Dept of Fisheries & Oceans. 1999. Status of Wild Striped Bass, & Interaction between Wild & Cultured Striped Bass in the Maritime Provinces. , Science Stock Status Report D3-22. 13 recs.
4	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
4	Godbout, V. 2000. Recherche de l'Aster du St-Laurent (Aster laurentianus) et du Satyre des Maritimes (Coenonympha nepisiquit) au Parc national Kouchibouguac et a Dune du Bouctouche, N-B. Irving Eco-centre, 23 pp.
4	Gravel, Mireille. 2010. Coordonnées des tortues des bois Salmon River Road, 2005. Kouchibouguac National Park, 4 recs.
4	Hicklin, P.W. 1995. The Maritime Shorebird Survey Newsletter. Calidris, No. 3. 6 recs.
4	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2010. New Brunswick Dept Natural Resources, 16 recs (11 active).
4	McNeil, J.A. 2016. Blandings Turtle (Emydoidea blandingii), Eastern Ribbonsnake (Thamnophis sauritus), Wood Turtle (Glyptemys insculpta), and Snapping Turtle (Chelydra serpentina) sightings, 2016. Mersey Tobeatic Research Institute, 774 records.
4	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
4	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
4	Phillips, B. 2017. Emails to John Klymko regarding Eastern Waterfan (Peltigera hydrothyria) occurrences in Fundy National Park. Fundy Biosphere Reserve, 3 recs.
4	Popma, K. 2001. Phalarope & other bird observations in Westmorland Co. , Pers. comm. to K.A. Bredin. 5 recs.
4	Powell, B.C. 1967. Female sexual cycles of Chrysemy spicta & Clemmys insculpta in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.

# recs	CITATION
4	Sabine, D.L. 2012. Bronze Copper records, 2003-06. New Brunswick Dept of Natural Resources, 5 recs.
4	Sabine, M. 2016. Black Ash records from the NB DNR Forest Development Survey. New Brunswick Department of Natural Resources.
4	Wisniowski, C. & Dowding, A. 2020. NB species occurrence data for 2020. Nature Trust of New Brunswick.
3	Curley, F.R. 2007. PEF&W Collection. PEI Fish & Wildlife Div., 199 recs.
3	Doucet, D.A. 2009. Census of Globally Rare, Endemic Butterflies of Nova Scotia Gulf of St Lawrence Salt Marshes. Nova Scotia Dept of Natural Resources, Species at Risk, 155 recs.
3	e-Butterfly. 2018. Selected Maritimes butterfly records from 2016 and 2017. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
3	Ferguson, D.C. 1954. The Lepidoptera of Nova Scotia. Part I, macrolepidoptera. Proceedings of the Nova Scotian Institute of Science, 23(3), 161-375.
3	Gagnon, E. Herbarium from 2017 Plant Systematics class. Université de Moncton. 2017.
3	Gautreau-Daigle, H. 2007. Rare plant records from peatland surveys. Coastal Zones Research Institute, Shippagan NB. Pers. comm. to D.M. Mazerolle, 39 recs.
3	Gautreau, R. 2005. Betula michauxii occurrence on Bog 324, near Baie-Ste-Anne, NB. Pers. comm. to C.S. Blaney, 3 recs.
3	Gauvin, J.M. 1979. Etude de la vegetation des marais sales du parc national Kouchibouguac, N-B. M.Sc. Thesis, Universite de Moncton, 248 pp.
3	Godbout, Valerié. 2010. Étude de l'Aster du Saint-Laurent dans le parc national Kouchibouguac, 2000-04. Parks Canada, 3 recs.
3	Golder Associates. 2018. Dorchester wind turbine bat detections. Owens, Luke, Firman, Mitch, Melcher, Heather (ed.) Golder Associates Ltd.
3	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
3	Grondin, P. & Blouin, J-L., Bouchard, D.; et al. 1981. Description et cartographie de la vegetation du cordon littoral. Parc National de Kouchibouguac. Le Groupe Dryade, 57 pp.
3	Holder, M. & Kingsley, A.L. 2000. Peatland Insects in NB & NS: Results of surveys in 10 bogs during summer 2000. Atlantic Canada Conservation Data Centre, Sackville, 118 recs.
3	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
3	Klymko, J.J.D. 2012. Insect field work & submissions. Atlantic Canada Conservation Data Centre, 852 recs.
3	LaPaix, R.W. 2014. Trans-Canada Energy East Pipeline Environmental Assessment, Records from 2013-14. Stantec Consulting, 5 recs.
3	MacQuarrie, K. 1991-1999. Site survey files, maps. Island Nature Trust, Charlottetown PE, 60 recs.
3	McLelland, Don. 2020. Orchid observations at Enmore River, PEI. Don McLelland. Pers. comm. to C.S. Blaney.
3	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.
3	NS DNR. 2017. Black Ash records from NS DNR Permanent Sample Plots (PSPs), 1965-2016. NS Dept of Natural Resources.
3	Nye, T. 2002. Wood Turtle observations in Westmorland, Queens Cos. , Pers. com. to S.H. Gerriets, Dec. 3. 3 recs.
3	Sabine, M. 2016. Black Ash records from NB DNR permanent forest sampling Plots. New Brunswick Department of Natural Resources, 39 recs.
3	Sabine, M. 2016. NB DNR staff incidental Black Ash observations. New Brunswick Department of Natural Resources.
3	Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.
3	Toms, B. 2018. Bat Species data from www.batconservation.ca for Nova Scotia. Mersey Tobeatic Research Institute, 547 Records.
3	Toner, M. 2001. Lynx Records 1973-2000. NB Dept of Natural Resources, 29 recs.
2	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
2	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
2	Belliveau, A.G. E.C. Smith Herbarium Specimen Database 2019. E.C. Smith Herbarium, Acadia University. 2019.
2	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
2	Boyne, A.W. 2000. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 168 recs.
2	Clayden, S.R. 2012. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 57 recs.
2	Clayden, S.R.; Goltz, J.P. 2018. Emails to Sean Blaney on occurrence of Polygonum douglasii at Big Bluff, Kings Co., New Brunswick. pers. comm., 1 record.
2	Clerc, P. 2011. Notes on the genus Usnea Adanson (lichenized Ascomycota). III. Bibliotheca Lichenologica, 106, 41-51.
2	Donelle, R. 2007. Bouctouche Dune Rare Coastal Plant Data. Irving Eco-centre, la Dune du Bouctouche, 2 recs.
2	Doucet, D.A. 2008. Wood Turtle Records 2002-07. Pers. comm. to S. Gerriets, 7 recs, 7 recs.
2	eBird. 2021. eBird Basic Dataset. Version: EBD_relOct-2020. Ithaca, New York. Oct 2020, Prince Edward Island Bird SAR subset. Cornell Lab of Ornithology.
2	Godbout, V. 2001. Recherche de l'Aster du St-Laurent (Symphyotrichum laurentianum) dans les marais sales du sud-est du Nouveau-Brunswick. Irving Eco-centre, la Dune du Bouctouche, 23 pp.
2	Goltz, J.P. 2002. Botany Ramblings: 1 July to 30 September, 2002. N.B. Naturalist, 29 (3):84-92. 7 recs.
2	Kelly, G. 2005. Fraxinus nigra. Dept of Agricuture, Fisheries, Aquaculture & Forestry. Pers. comm. to C.S. Blaney, Mar. 2, 11 recs.
2	Klymko, J.J.D. 2010. Miscellaneous observations reported to ACCDC (zoology). Pers. comm. from various persons, 3 recs.
2	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
2	Litvak, M.K. 2001. Shortnose Sturgeon records in four NB rivers. UNB Saint John NB. Pers. comm. to K. Bredin, 6 recs.
2	Marshall, L. 1998. Atlantic Salmon: Southwest New Brunswick outer-Fundy SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-13. 6 recs.
2	Mazerolle, D. 2003. Assessment and Rehabilitation of the Gulf of St Lawrence Aster (Symphyotrichum laurentianum) in Southeastern New Brunswick. Irving Eco-centre, la Dune du Bouctouche, 13 recs.
2	Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
2	NatureServe Canada. 2018. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
2	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
2	Parker, M. 2016. Wood turtle (Glyptemys insculpta) Visual Surveys at Black, Wallace, Musquodobit and Sackville Rivers, Nova Scotia. East Coast Aquatics Inc., 3 records.
2	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (Riparia riparia) in Nova Scotia: inventory and assessment of colonies. Merset Tobeiatc Research Institute, 25 recs.
2	Richardson, D., Anderson, F., Cameron, R, Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (Pannaria lurida). COSEWIC.
2	Vladimir King Trajkovic. 2018. Brook Floater (Alasmidonta varicosa) records from MREAC surveys 2010-2017. Miramichi River Environmental Assessment Committee.
2	Webster, R.P. Database of R.P. Webster butterfly collection. 2017.
2	Zahavich, J. 2018. Canada Warbler and Olive-sided Flycatcher records 2018. Island Nature Trust, 14 recs.
1	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of C. insculpta sightings. Acadia University, Wolfville NS, 88 recs.
1	Amirault, D.L. 2003. 2003 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.

# recs	CITATION
1	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
1	Bagnell, B.A. 2003. Update to New Brunswick Rare Bryophyte Occurrences. B&B Botanical, Sussex, 5 recs.
1	Barney, T. 2020. Text message to Sean Blaney from Ted Barney with photograph of large Snapping Turtle at White Birch Impoundment, Westmorland Co., NB. pers. comm., 1 record.
1	Belland, R.J. 2012. PEI moss records from Devonian Botanical Garden. DBG Cryptogam Database, Web site: https://secure.devonian.ualberta.ca/bryo_search.php 748 recs.
1	Belland, R.J. 2012. PEI moss records from New York Botanical Garden. NYBG Virtual Herbarium, Web site: http://sciweb.nybg.org/science2/vii2.asp 135 recs.
1	Belliveau, A.G. 2020. Email to Colin Chapman on new NS locations for Allium tricoccum. Chapman, C.J. (ed.) Acadia University.
1	Bishop, G. & Papoulias, M.; Arnold (Chaplin), M. 2005. Grand Lake Meadows field notes, Summer 2005. New Brunswick Federation of Naturalists, 1638 recs.
1	Bishop, G. 2012. Field data from September 2012 Anticosti Aster collection trip. , 135 rec.
1	Blaney, C.S. 1999. Fieldwork 1999. Atlantic Canada Conservation Data Centre. Sackville NB, 292 recs.
1	Blaney, C.S. 2014. 2014 Bank Swallow colony observation, Westcock, NB. Atlantic Canada Conservation Data Centre.
1	Blaney, C.S. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
1	Bouchard, A. Herbier Marie-Victorin. Universite de Montreal, Montreal QC. 1999.
1	Bredin, K.A. 2000. NB & NS Bog Project, fieldwork. Atlantic Canada Conservation Data Centre, Sackville, 1 rec.
1	Bredin, K.A. 2001. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centere, 16 recs.
1	Bredin, K.A. 2002. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centere, 30 recs.
1	Cameron, R.P. 2009. Cyanolichen database. Nova Scotia Environment & Labour, 1724 recs.
1	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
1	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
1	Cameron, R.P. 2018. Degelia plumbea records. Nova Scotia Environment.
1	Chaput, G. 1999. Atlantic Salmon: Miramichi & SFA 16 Rivers. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-05. 6 recs.
1	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
1	Clavette, A., and others. 2013. Peregrine Falcon nesting information from NatureNB listserv. NatureNB.
1	Clayden, S.R. 2020. Email to Sean Blaney regarding Pilophorus cereus and P. fibula at Fidele Lake area, Charlotte County, NB. pers. comm., 2 records.
1	Cormier, R. 2019. Wood Turtle observation. pers. comm. to J.L. Churchill.
1	COSEWIC (Committee on the Status of Wildlife in Canada). 2013. COSEWIC Assessment and Status Report on the Eastern Waterfan Peltigera hydrothyria in Canada. COSEWIC, 46 pp.
1	Cronin, P. & Ayer, C.; Dubee, B.; Hooper, W.C.; LeBlanc, E.; Madden, A.; Pettigrew, T.; Seymour, P. 1998. Fish Species Management Plans (draft). NB DNRE Internal Report. Fredericton, 164pp.
1	DeMerchant, A. 2019. Bank Swallow colony observation. NB Department of Energy and Resource Development, Pers. comm. to J.L. Churchill.
1	Desilets-Starrak, J. 2015. Wood Turtle record. Pers. comm. to E. Tremblay, Parks Canada.
1	Dibblee, R.L. 1999. PEI Cormorant Survey. Prince Edward Island Fisheries, Aquaculture & Environment, 1p. 21 recs.
1	Doucet, D.A. 2007. Fieldwork 2007: Insects (minus Odonata). ACCDC Staff, 1 rec.
1	Edsall, J. 1992. Summer 1992 Report. New Brunswick Bird Info Line, 2 recs.
1	Edsall, J. 2007. Lepidopteran Records from Halls Creek, 1994-2000. Edsall, 43 recs.
1	Elizabeth Spence. 2020. Email from Elizabeth Spence to John Klymko about the occurrence of a Wood Turtle in Westmorland County, New Brunswick. Pers. comm.
1	Freudenstein, John V. 1997. A Monograph of Corallorhiza (Orchidaceae). Harvard Papers in Botany, 1:5-51.
1	Gerriets, S.H. 1997-2001. Element Occurrence Database. Atlantic Canada Conservation Data Centre, Sackville NB, 1 rec.
1	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
1	Goltz, J.P. 2007. Field Notes: Listera australis at Kouchibouguac National Park. , 7 recs.
1	Harding, R.W. 2008. Harding Personal Insect Collection 1999-2007. R.W. Harding, 309 recs.
1	Hill, N.M. 1994. Status report on the Long's bulrush Scirpus longii in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
1	Hinds, H.R. 2000. Rare plants of Fundy in Rare Plants of Fundy: maps. Wissink, R. (ed.) Parks Canada, 2 recs.
1	Kelly, Glen 2004. Botanical records from 2004 PEI Forestry fieldwork. Dept of Environment, Energy & Forestry, 71 recs.
1	Kirkland, G.L. Jr. & Schmidt, D.F. 1982. Abundance, habitat, reproduction & morphology of forest-dwelling small mammals of NS & south-eastern NB. Can. Field-Nat., 96(2): 156-162. 1 rec.
1	Kirkland, G.L. Jr., Schmidt, D.F. & Kirkland, C.J. 1979. First record of the long-tailed shrew (Sorex dispar) in New Brunswick. Can. Field-Nat., 93: 195-198. 1 rec.
1	LaFlamme, C. 2008. Disovery of Goodyera pubescens at Springdale, NB. Amec Earth and Environmental. Pers. comm. to D.M. Mazerolle, 1 rec.
1	Lantz, Joan; Lantz, Keith 2015. eBird record of Sandhill Crane from Chapman Settlement, NS. eBirg.org.
1	Loo, J. & MacDougall, A. 1994. GAP analysis: Summary Report. Fundy Model Forest, 2 recs.
1	MacKinnon, D.S. 2013. Email report of Peregrine Falcon nest E of St. Martins NB. NS Department of Environment and Labour, 1 record.
1	Madden, A. 1998. Wood Turtle records in northern NB. New Brunswick Dept of Natural Resources & Energy, Campbellton, Pers. comm. to S.H. Gerriets. 16 recs.
1	Majka, C.G. 1967. The butterflies of Albert County. Bulletin of the Moncton Naturalists Club, 13-20.
1	McAlpine, D.F. & Collingwood, L. 1989. Rare Salamander Survey in Fundy National Park. Fundy National Park, Internal Documents, 1 rec.
1	McAlpine, D.F. 1983. Species Record Cards. Fundy National Park, Library, 1 rec.
1	McLellan, N. 2013. Discovery of extensive Nuphar lutea ssp. rubrodisca population at Tyne Valley. Ducks Unlimited, 1 record.
1	Miller, D.G. 2013. Peregrine Falcon nesting information from birdingnewbrunswick.ca. birdingnewbrunswick.ca.
1	Mills, Elizabeth and Bishop, Gart. 2020. Cuscuta cephalanthi record, Grand-Barachois, NB. Chapman-Lam, Colin J. (ed.) pers. comm., 1.
1	Neily, T.H. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobeatic Research Institute, 1301 records.
1	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.
1	Novak, Pam. 2017. Email to John Klymko regarding Chelydra serpentina record.
1	O'Neil, S. 1998. Atlantic Salmon: Northumberland Strait Nova Scotia part of SFA 18. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-08. 9 recs.

# recs	CITATION
1	Parker, M. 2018. East Coast Aquatics ACCDC 2018 Report. East Coast Aquatics, 12 records.
1	Poirier, Nelson. 2012. Geranium robertianum record for NB. Pers. comm. to S. Blaney, Sep. 6, 1 rec.
1	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
1	Rankin, Andrew. 2017. Second-ever N.S. sighting: Big brown bat turns up in Oxford. The Chronicle Herald online edition (Herald News).
1	Saunders, J. 2009. White-Fringe Orchis photo and coordinates. Pers. comm. to S. Blaney, July 17. 1 rec, 1 rec.
1	Simpson, D. Collection sites for Black Ash seed lots preserved at the National Tree Seed Centre in Fredericton NB. National Tree Seed Centre, Canadian Forest Service. 2016.
1	Smith, M. 2013. Email to Sean Blaney regarding Schizaea pusilla at Caribou Plain Bog, Fundy NP. pers. comm., 1 rec.
1	Sollows, M.C,. 2009. NBM Science Collections databases: Coccinellid & Cerambycid Beetles. New Brunswick Museum, Saint John NB, download Feb. 2009, 569 recs.
1	Spicer, C.D. 2004. Specimens from CWS Herbarium, Mount Allison Herbarium Database. Mount Allison University, 5939 recs.
1	Standley, L.A. 2002. Carex haydenii in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
1	Steeves, R. 2004. Goodyera pubescens occurrence from Colpitts Brook, Albert Co. , Pers. comm. to C.S. Blaney. 1 rec.
1	Stevens, C. 1999. Cam Stevens field data from PEI vegetation plots. Sent along with specimens to C.S. Blaney. UNB masters research project, 732 recs.
1	Stevens, Joshua. 2020. Facebook record of Ophiogomphus howei.
1	Toner, M. 2005. Lynx Records 1996-2005. NB Dept of Natural Resources, 48 recs.
1	Tremblay, E., Craik, S.R., Titman, R.D., Rousseau, A. & Richardson, M.J. 2006. First Report of Black Terns Breeding on a Coastal Barrier Island. Wilson Journal of Ornithology, 118(1):104-106. 1 rec.
1	Vinison, Neil. 2018. Record of Saxifraga paniculata from Fundy NP, emailed to S. Blaney 19 July 2018. Pers. comm.
1	Vinson, N. 2018. Email to S. Blaney regarding new occurrence of Saxifraga paniculata on Point Wolfe River. Parks Canada, 1 record.
1	Vinson, N. 2019. Eastern Waterfan record from Long Reach Brook, Fundy National Park, June 12, 2019. Parks Canada Agency, Fundy National Park, 1 record.
1	Vinson, Neil. 2016. Emails to Sean Blaney regarding yellow flower (Primula veris) and coastal habitat leaf rosettes (Primula laurentiana) in Fundy National Park. pers. comm., 2 rec.
1	White, S. 2019. Notable species sightings, 2018. East Coast Aquatics.
1	Wissink, R. 2000. Four-toed Salamander Survey results, 2000. Fundy National Park, Internal Documents, 1 rec.
1	Young, A.D., Titman, R.D. 1986. Costs and benefits to Red-breasted Mergansers nesting in tern and gull colonies. Can. J. Zool., 64: 2339-2343.
1	Zahavich, J. 2017. Canada Warbler and Olive-sided Flycatcher records 2017. Island Nature Trust, 14 recs.

APPENDIX G

Wetland Delineation Reports (2020 & 2021)

hive ENGINEERING

WETLAND DELINEATION REPORT: SATARA Dr., MONCTON, NB

July 12, 2021

For

CVR Homes
46 Diamond Head Ct #113
Moncton, NB
E1G 5S3

By

Theo Popma MSc. (Wetland Delineator) at Overdale Environmental Inc.
342 Highfield Street
Moncton, NB
E1C 5R6
tpopma@nb.sympatico.ca
www.Overdale.net
506-227-7605

Figures:	Appendix A
Datapoint Photos:	Appendix B
Wetland Data Sheets:	Appendix C
Background Information:	Appendix D
Google Earth Files:	Attachment

Introduction

A Wetland Delineation survey was conducted on PID 70629431 (Figure 1) by Theo Popma of Overdale Environmental Inc. on June 26 and 27, 2021. Mr. Popma is a recognized wetland delineator in the province of New Brunswick. Weather conditions were cloudy with moderate wind with temperatures around 22C. Recently there had been a mix of rain and sun.

This report is in support of an EIA being conducted for permitting for development of the site.

Results

See Figure 3.

Photos at each datapoint location are shown in Appendix B. Datasheets are shown in Appendix C.

Datapoints are described below.

DP 1 (Upland)

No hydrological indicators were present here. Soils were mottled with the majority of the matrix being un-depleted. Vegetation was generally hydric and dominated by shrubs and saplings such as Wild Raisin (*Viburnum nudum*) and Balsam Fir (*Abies balsamea*).

DP 2 (Wetland)

Soils were depleted and saturated with 20cm of peaty organics at the surface. Vegetation was typical of bogs and included Leatherleaf (*Chamaedaphne calyculata*) and Rhodora (*Rhododendron canadense*).

DPs 3 and 4 (Wetland)

Soils were saturated histosols. Dominant vegetation was typical of bogs: Sheep Laurel (*Kalmia angustifolia*) and Tamarack (*Larix laricina*).

DP 5 (Wetland)

The only hydrological indicators here were Sparsely Vegetated Depressions (SVD) and Drainage Patters. Soils were depleted to a thickness of 7cm starting within the top 10cm from the surface and so were designated as a Depleted Matrix. Vegetation was dominated by wetland graminoids such as Soft Rush (*Juncus effusus*).

DPs 6, 7, 10, 12 (Wetland)

These were all atypical situations where human activity such as ditching, deforestation and infilling are significantly influencing hydric indicators. Soils were generally depleted to some extent and mottled with the parent material. Hydrological indicators consisted predominantly of SVD. These were sometimes difficult to distinguish from skidder tracks. Vegetation was still dominated by hydric plants.

DPs 8 and 13 (Upland)

These points were situated in a regenerating clearcut and were therefore atypical. Hydrological indicators were absent. Gray Birch (*Betula populifolia*) was dominant over most of the area. Soils were not depleted.

DPs 9 (Upland)

This point was somewhat influenced by human activity on the PID directly to the north, although forest habitat was fairly mature. Hydrological indicators consisted only of SVD. Soils had low chromas but also low value so were not Depleted Matrices. Vegetation was dominanted by typical forest species such as Starflower (*Trientalis borealis*) and Wild Lilly of the Valley (*Maianthemum canadense*).

DP 11 (Upland)

This point was also influenced by human activity on the PID directly to the north. The only hydrological markers were Water Stained Leaves in SVDs, and these were somewhat obscured. Soils were depleted but depleted horizons were thin. Much of the soil matrix was not depleted. Organics on the surface appeared to be peaty and dried-down.

Discussion

The delineation began at the northeast corner where the boundary was clear between the bog and upland forest. This boundary was followed south into the open bog by the powerline where a large culvert was noted. The boundary then turned to follow the edge of a dirt road along the south side of the wetland. This area was highly disturbed.

The western edge was delineated by beginning with marshy habitat which was associated with a culvert in the southwest corner of the PID. This edge was followed up the west side through shrubby transitional habitat to the deforested PID to the north. The northern boundary was briefly delineated as it paralleled the PID boundary as well. This boundary was obscured by atypical indicators.

The majority of the northern boundary of the PID was embedded in wetland habitat.

The small portion of wetland in the southeastern corner was added later since it was dissociated from the rest of the wetland by the dirt road. Ditching here was particularly deep and habitats were dried-down.

Conclusion

Approximately 3 Hectares of wetland was identified and delineated on the PID. This wetland is known to continue onto the PID to immediately to the north as per a previous delineation conducted by Overdale.

Wetland habitats included intact Bog and Shrub Swamp as well as heavily impacted marshy shrubby habitat where indicators were considered to be atypical due to nearby development of new residential subdivisions.

Closing

We trust this information meets your current needs. Please feel free to contact us via telephone at (506) 227-7605 or by email at tpopma@nb.sympatico.ca with any questions or comments.

Sincerely,

Theo Popma BSc, MSc.
President, Overdale Environmental Inc.

APPENDIX A

FIGURES

APPENDIX A: FIGURES

Figure 1. Survey Area

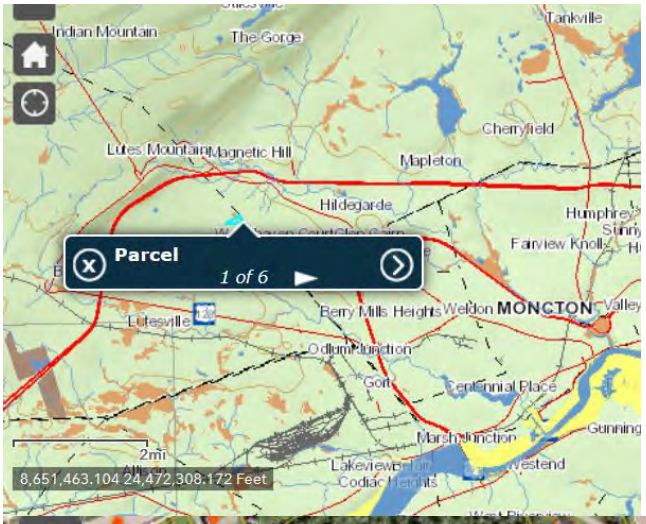


Figure 1	Survey Location		Overdale Environmental Inc.

Figure 2. GeoNB Wetlands Map

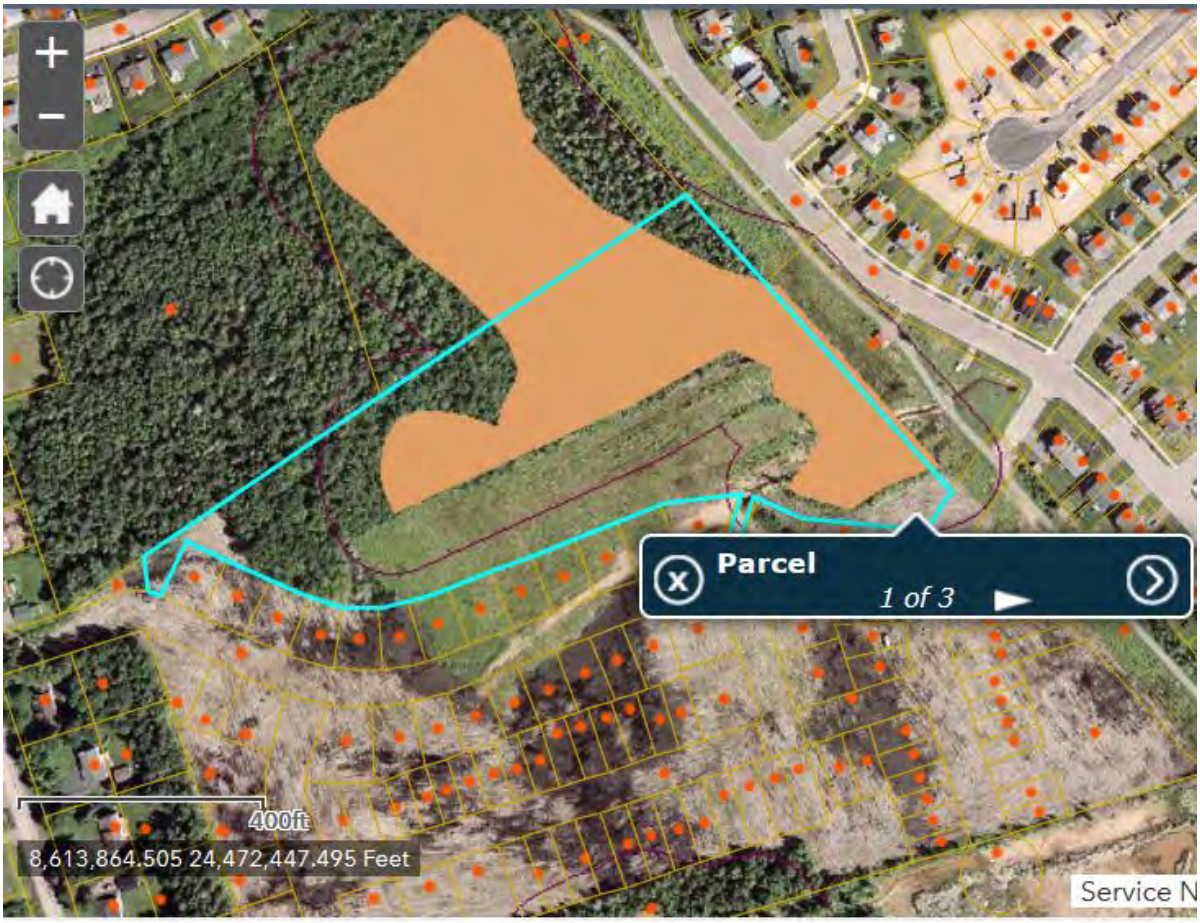


Figure 2	GeoNB Wetland Map		Overdale Environmental Inc.

Figure 3. Wetland Delineation Schematic.

Figure 3	Wetland Delineation Schematic	Blue Polygon: Wetland Blue Line: Ditch channel Blue Points: Wetland Datapoints White Points: Upland Datapoints White Line: PID Boundary	

APPENDIX B

DATAPOINT PHOTOS

Datapoint 1	Upland		Overdale Environmental Inc.

Datapoint 2	Wetland		Overdale Environmental Inc.

Datapoint 3	Wetland		Overdale Environmental Inc.

Datapoint 4	Wetland		Overdale Environmental Inc.

Datapoint 5	Wetland		Overdale Environmental Inc.

Datapoint 6	Wetland		Overdale Environmental Inc.

Datapoint 7	Wetland		Overdale Environmental Inc.

Datapoint 8	Upland		Overdale Environmental Inc.

Datapoint 9	Upland		Overdale Environmental Inc.

Datapoint 10	Wetland		Overdale Environmental Inc.

Datapoint 11	Upland		Overdale Environmental Inc.

Datapoint 12	Wetland		Overdale Environmental Inc.

Datapoint 13	Upland		Overdale Environmental Inc.

APPENDIX C

WETLAND DATASHEETS

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	1	Page	1	WPT #: 42
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma						
County:	Westmorland			Coordinates:	2625297.71; 7459326.16						
PID 70629431				Do normal environmental conditions exist on-site?			Yes	x	No		
If no, explain:											
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage							
Is this a potential **Problem Area?**		Yes	No x	Explain:							

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes		No	x	
Hydric Soils	Yes		No	x	**YES** x **NO**

Wetland Type:
Rational for Determination:

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	10	x	*fac*
2	*Picea rubens*	10	x	*fac*
3	*Betula papyrifera*	5	x	*facu*
4				
5				
6				
		25	= **Total Cover**	
	Shrub Stratum: (Plot size: 5m2)			
1	*Viburnum nudum*	20	x	*fac*
2	*Abies balsamea*	15	x	*fac*
3	*Prunus virginiana*	10	x	*fac*
4				
5				
		45	= **Total Cover**	
	Herb Stratum: (Plot Size: 1m2)			
1	*Kalmia angustifolia*	10	x	*fac*
2	*Vaccinium angustifolium*	10	x	*fac*
3	*Cornus canadensis*	10	x	*fac*
4				
5				
		30	= **Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	9
% of Dominant Species that are OBL,FACW,FAC:	88.9

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 1 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	

A>B:=hydric

Field Observations:

Surface Water Present?	Yes		No	x	Depth
Saturation Present?	Yes		No	x	Depth
High Watertable Present?	Yes		No	x	Depth

Wetland Hydrology Present? **Yes** **No** x

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix Color(moist)	Matrix %	Redox Features Color(moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 5cm	organic							
5 to 20	7.5 YR 5/3	60	7.5YR 5/2	40				
20 -	7.5 YR 4/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		Coast Prairie Redox (A16)
	Black Histic (A3)		Dark Surfaces (S7)		5cm Mucky Peat or Peat (S3)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		Iron-Manganese Masses (F12)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Piedmont Floodplain Soils (F19)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Red Parent Material (F21)
	Thick Dark Surface (A12)		Depleted Matrix (F3)		Very Shallow Dark Surface (F22)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Other (explain)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed): Depth: **Hydric Soil Present?** **Yes** **No** x

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	2	Page	1	WPT #: 43
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma						
County:	Westmorland			Coordinates:	2625283.75; 7459309.64						
PID 70629431				Do normal environmental conditions exist on-site?			Yes	x	No		
If no, explain:											
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage							
Is this a potential **Problem Area?**		Yes	No x	Explain:							

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes	x	No		x **YES** **NO**

Wetland Type: Shrub/Forested Wetland

Rational for Determination: Forested at edge, low shrub in middle

Vegetation

		%Cover		Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)					
1	*Larix laricina*	5		x	*fac*
2					
3					
4					
5					
6					
		5	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Acer rubrum*	10			*fac*
2	*Betula populifolia*	10			*fac*
3	*Abies balsamea*	10			*fac*
4	*Larix laricina*	10			*fac*
5	*Rhododendron canadense*	15		x	*fac*
		55	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Chamaedaphne calyculata*	40		x	*obl*
2	*Calamagrostis canadensis*	5			*facw*
3					
4					
5					
		45	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	3
Total # of Dominant Species across all strata:	3
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 2 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
x	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes		No	x	Depth
Saturation Present?	Yes	x	No		Depth 0cm
High Watertable Present?	Yes		No	x	Depth

Wetland Hydrology Present? **Yes** **No**

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 20cm	organic							
20 -	10YR 5/2							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	3	Page	1	WPT #:	64
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625229.48; 7459275.17							
PID	70629431			Do normal environmental conditions exist on-site?				Yes	x	No		
If no, explain:												
Atypical Situation?	Yes	x	No		Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage						
Is this a potential **Problem Area?**			Yes		No	x	Explain:					

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes	x	No		x **YES** **NO**

Wetland Type: Shrub Swamp
Rational for Determination: shrub-dominated wetland

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover		Dominant Species	Indicator Status
1					
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)				
1	*Rhododendron canadense*	15		x	*fac*
2	*Alnus incana*	15		x	*facw*
3	*Betula populifolia*	15		x	*fac*
4	*Acer rubrum*	15		x	*fac*
5					
		60	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)				
1	*Kalmia angustifolia*	15		x	*fac*
2	*Calamagrostis canadensis*	10		x	*facw*
3					
4					
5					
		25	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	6
Total # of Dominant Species across all strata:	6
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 3 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
x	High Water Table (A2)	___	Aquatic Fauna (B13)
x	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___					
Saturation Present?	Yes x	No ___	Depth 0cm					
High Watertable Present?	Yes x	No ___	Depth 15cm	**Wetland Hydrology Present?**	**Yes**	x	**No**	___

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 30cm	organic							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

x	Histosol (A1)				
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)		
___	Black Histic (A3)	___	Dark Surfaces (S7)	___	Coast Prairie Redox (A16)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)	___	5cm Mucky Peat or Peat (S3)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)	___	Iron-Manganese Masses (F12)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)	___	Piedmont Floodplain Soils (F19)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)	___	Red Parent Material (F21)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)	___	Very Shallow Dark Surface (F22)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)	___	Other (explain)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)		

Restrictive Layer Type (if observed ___ Depth: ___ **Hydric Soil Present?** **Yes** x **No** ___

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton		Date:	26-Jun-21	Sample Point:	4	Page	1	WPT #:	65
Client/owner:	CVR Homes		Field Investigator(s):	Theo Popma						
County:	Westmorland		Coordinates:	2625245.15; 7459242.59						
PID 70629431			Do normal environmental conditions exist on-site?				Yes	x	No	
If no, explain:										
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage						
Is this a potential **Problem Area?**		Yes	No x	Explain:						

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No	***Wetland Determination***	
Wetland Hydrology	Yes x	No		
Hydric Soils	Yes x	No	x **YES**	**NO**

Wetland Type: Shrub swamp

Rational for Determination: few trees, mostly shrub dominated wetland

Vegetation

		%Cover	Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)				
1	*Larix laricina*	15	x	*fac*
2				
3				
4				
5				
6				
		15 =	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)				
1	*Populus tremuloides*	15	x	*fac*
2	*Acer rubrum*	15	x	*fac*
3	*Alnus incana*	15	x	*facw*
4	*Rhododendron canadense*	15	x	*fac*
5				
		60 =	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)				
1	*Chamaedaphne calyculata*	5	x	*obl*
2	*Calamagrostis canadensis*	5	x	*facw*
3				
4				
5				
		10 =	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	7
Total # of Dominant Species across all strata:	7
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 4 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
x	High Water Table (A2)		Aquatic Fauna (B13)
x	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes		No	x	Depth
Saturation Present?	Yes	x	No		Depth 0
High Watertable Present?	Yes	x	No		Depth 15

Wetland Hydrology Present? **Yes** x **No**

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 30cm	organic							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

x	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		Coast Prairie Redox (A16)
	Black Histic (A3)		Dark Surfaces (S7)		5cm Mucky Peat or Peat (S3)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		Iron-Manganese Masses (F12)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Piedmont Floodplain Soils (F19)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Red Parent Material (F21)
	Thick Dark Surface (A12)		Depleted Matrix (F3)		Very Shallow Dark Surface (F22)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Other (explain)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	5	Page	1	WPT #:	70
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625075.98; 7459144.96							
PID 70629431				Do normal environmental conditions exist on-site?				Yes	x	No		
If no, explain:												
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage								
Is this a potential **Problem Area?**		Yes	No x	Explain:								

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		x **YES** ☐ **NO**
Hydric Soils	Yes	x	No		

Wetland Type: Marsh

Rational for Determination: Grassy clearing near culverted drainage ditch

Vegetation

		%Cover		Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)					
1	*Populus tremuloides*	5		x	*fac*
2					
3					
4					
5					
6					
		5	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Spiraea tomentosa*	5		x	*fac*
2	*Spiraea alba*	5		x	*fac*
3	*Betula populifolia*	5		x	*fac*
4	*Salix sp.*	5		x	*fac*
5					
		20	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Calamagrostis canadensis*	20		x	*facw*
2	*Carex comosa*	20		x	*obl*
3	*Juncus effusus*	15		x	*facw*
4	*Doellingeria umbellata*	10			*fac*
5	*Carex debilis*	5			*fac*
		70	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 5 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
x	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes		No	x	Depth		
Saturation Present?	Yes		No	x	Depth		
High Watertable Present?	Yes		No	x	Depth		**Wetland Hydrology Present?** **Yes** x **No**

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 9cm	organic							
9 to 16cm	7.5YR 5/2							
16 -	7.5YR 4/6							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	6	Page	1	WPT #:	89
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625146.2; 7459162.63							
PID 70629431				Do normal environmental conditions exist on-site?				Yes	x	No		
If no, explain:												
Atypical Situation?	Yes	x	No		Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage						
Is this a potential **Problem Area?**			Yes		No	x	Explain:					

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes	x	No		x **YES** **NO**

Wetland Type: Shrub Swamp

Rational for Determination: grassy shrubby impacted wetland area

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover		Dominant Species	Indicator Status
1	*none*				
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)				
1	*Betula populifolia*	10		x	*fac*
2	*Acer rubrum*	10		x	*fac*
3	*Populus tremuloides*	10		x	*fac*
4	*Alnus incana*	10		x	*facw*
5	*Spiraea alba*	10		x	*fac*
		50	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)				
1	*Calamagrostis canadensis*	30		x	*facw*
2	*Juncus effusus*	10		x	*facw*
3	*Rubus idaeus*	5			*fac*
4					
5					
		45	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	7
Total # of Dominant Species across all strata:	7
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 6 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
x	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes		No	x	Depth		
Saturation Present?	Yes		No	x	Depth		
High Watertable Present?	Yes		No	x	Depth		**Wetland Hydrology Present?** **Yes** x **No**

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 5cm	organic							
5 to 20	5YR 4/2							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

refusal at 20cm; infilled

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	7	Page	1	WPT #:	93
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625175.73; 7459170.34							
PID 70629431				Do normal environmental conditions exist on-site?					Yes	x	No	
If no, explain:												
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage								
Is this a potential **Problem Area?**		Yes	No x	Explain:								

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes	x	No		x **YES** **NO**

Wetland Type: Shrubby swamp

Rational for Determination: cutover atypical wetland

Vegetation

		%Cover		Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)					
1	*none*	15		x	*#N/A*
2					*#N/A*
3					*#N/A*
4					*#N/A*
5					*#N/A*
6					*#N/A*
		15	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Betula populifolia*	15		x	*fac*
2	*Larix laricina*	15		x	*fac*
3	*Acer rubrum*	15		x	*fac*
4	*Spiraea tomentosa*	15		x	*fac*
5	*Spiraea alba*	15		x	*fac*
		75	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Doellingeria umbellata*	10		x	*fac*
2	*Chamaedaphne calyculata*	10		x	*obl*
3	*Calamagrostis canadensis*	10		x	*facw*
4	*Solidago rugosa*	10		x	*fac*
5					
		40	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	9
Total # of Dominant Species across all strata:	9
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 7 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)		
	Drainage Patterns (B10)		Geomorphic Position (D2)		
	Moss Trim Lines (B16)		Shallow Aquitard (D3)		
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)		
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)	A OBL, FACW 0	
	Saturation Visible on Aerial Imagery (C9)			B UPL, FACU 0	

Field Observations: A>B:=hydric

Surface Water Present?	Yes		No	x	Depth		**Wetland Hydrology Present?**	**Yes**	x	**No**	
Saturation Present?	Yes		No	x	Depth						
High Watertable Present?	Yes		No	x	Depth						

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10cm	organic							
10 to	5YR 4/2							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21	Sample Point:	8	Page	1	WPT #: 101
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma					
County:	Westmorland			Coordinates:	2625251.93; 7459202.26					
PID 70629431				Do normal environmental conditions exist on-site?			Yes	x	No	
If no, explain:										
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage						
Is this a potential **Problem Area?**		Yes	No x	Explain:						

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes		No	x	
Hydric Soils	Yes		No	x	**YES** x **NO**

Wetland Type:
Rational for Determination:

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover		Dominant Species	Indicator Status
1	*none*				
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)				
1	*Betula populifolia*	75		x	*fac*
2	*Spiraea alba*	15			*fac*
3					
4					
5					
		90	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)				
1	*Rubus allegheniensis*	5		x	*facu*
2	*Symphyotrichum lateriflorum*	5		x	*fac*
3	*Solidago rugosa*	5		x	*fac*
4					
5					
		15	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	3
Total # of Dominant Species across all strata:	4
% of Dominant Species that are OBL,FACW,FAC:	75

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 8 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)			
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)			
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)			
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)			
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)	A	OBL, FACW	0
___	Saturation Visible on Aerial Imagery (C9)			B	UPL, FACU	0

Field Observations: A>B:=hydric

Surface Water Present?	Yes	___	No	x	Depth	___	**Wetland Hydrology Present?**	**Yes**	___ **No** x
Saturation Present?	Yes	___	No	x	Depth	___			
High Watertable Present?	Yes	___	No	x	Depth	___			

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 11cm	organic							
11 to	5YR 3/3							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)				
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)		
___	Black Histic (A3)	___	Dark Surfaces (S7)	___	Coast Prairie Redox (A16)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)	___	5cm Mucky Peat or Peat (S3)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)	___	Iron-Manganese Masses (F12)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)	___	Piedmont Floodplain Soils (F19)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)	___	Red Parent Material (F21)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)	___	Very Shallow Dark Surface (F22)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)	___	Other (explain)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** ___ **No** x

Comments:

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	9	Page	1	WPT #:	102
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625105.41; 7459187.59							
PID 70629431				Do normal environmental conditions exist on-site?				Yes	x	No		
If no, explain:												
Atypical Situation?	Yes x	No	Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage								
Is this a potential **Problem Area?**		Yes		No x	Explain:							

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes		No	x	**YES** x **NO**

Wetland Type:
Rational for Determination:

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1	*Acer rubrum*	5	x	*fac*
2	*Abies balsamea*	5	x	*fac*
3	*Populus tremuloides*	5	x	*fac*
4				
5				
6				
		15	= **Total Cover**	
	Shrub Stratum: (Plot size: 5m2)			
1	*Populus tremuloides*	10	x	*fac*
2	*Alnus incana*	10	x	*facw*
3	*Acer rubrum*	10	x	*fac*
4	*Betula populifolia*	10	x	*fac*
5	*Viburnum nudum*	10	x	*fac*
		50	= **Total Cover**	
	Herb Stratum: (Plot Size: 1m2)			
1	*Maianthemum canadense*	5	x	*fac*
2	*Carex trisperma*	5	x	*obl*
3	*Carex intumescens*	5	x	*fac*
4	*Trientalis borealis*	5	x	*fac*
5				
		20	= **Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	13
Total # of Dominant Species across all strata:	13
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 9 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)		Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)		
	Drainage Patterns (B10)		Geomorphic Position (D2)		
	Moss Trim Lines (B16)		Shallow Aquitard (D3)		
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)		
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)	A OBL, FACW 0	
	Saturation Visible on Aerial Imagery (C9)			B UPL, FACU 0	

Field Observations: A>B:=hydric

Surface Water Present?	Yes		No	x	Depth				
Saturation Present?	Yes		No	x	Depth				
High Watertable Present?	Yes		No	x	Depth		**Wetland Hydrology Present?**	**Yes** x	**No**

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 2 cm	organic							
2 to 12	10YR 3/2							
12 -	7.5YR 4/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)		Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed): Depth: **Hydric Soil Present?** **Yes** **No** x

Comments:

Project Site: Woodhaven, Magnetic Hill, Moncton
Date: 26-Jun-21 Sample Point: 10 Page 1 WPT #: 107
Client/owner: CVR Homes
Field Investigator(s): Theo Popma
County: Westmorland
Coordinates: 2625110.93; 7459231.5
PID 70629431
Do normal environmental conditions exist on-site? Yes ☒ No ☐

If no, explain:

Atypical Situation? Yes ☒ No ☐ Explain: Ditching, roadways, infilling, excavation, deforestation, artificial drainage
Is this a potential **Problem Area?** Yes ☐ No ☒ Explain:

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes ☒	No ☐
Wetland Hydrology	Yes ☒	No ☐
Hydric Soils	Yes ☒	No ☐

Wetland Determination
☒ **YES** ☐ **NO**

Wetland Type: Marsh
Rational for Determination: Deforested grassy wetland

Vegetation

		%Cover	Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)				
1	*Betula populifolia*	10	x	*fac*
2				
3				
4				
5				
6				
		10	= **Total Cover**	
Shrub Stratum: (Plot size: 5m2)				
1	*Populus tremuloides*	10	x	*fac*
2	*Betula populifolia*	10	x	*fac*
3	*Salix sp.*	10	x	*fac*
4	*Alnus incana*	10	x	*facw*
5	*Spiraea alba*	10	x	*fac*
		50	= **Total Cover**	
Herb Stratum: (Plot Size: 1m2)				
1	*Carex trisperma*	50	x	*obl*
2	*Carex canescens*	30	x	*obl*
3	*Calamagrostis canadensis*	10		*facw*
4	*Scirpus microcarpus*	5		*obl*
5				
		95	= **Total Cover**	

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:
x Rapid Test for Hydrolic Vegetation
x Dominance Test is >50%
___ Prevalence Index is≤3.0[1]
___ Morphological Adaptations[1](explain)
___ Problematic Hydrophytic Vegetation[1](explain)

[1] Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Comments

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 10 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___				
Saturation Present?	Yes ___	No x	Depth ___				
High Watertable Present?	Yes ___	No x	Depth ___	**Wetland Hydrology Present?**	**Yes**	x	**No** ___

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 5cm	organic							
5 - 15	7.5YR 4/1							
15 -	7.5YR 4/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)				
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)		
___	Black Histic (A3)	___	Dark Surfaces (S7)	___	Coast Prairie Redox (A16)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)	___	5cm Mucky Peat or Peat (S3)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)	___	Iron-Manganese Masses (F12)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)	___	Piedmont Floodplain Soils (F19)
___	Thick Dark Surface (A12)	x	Depleted Matrix (F3)	___	Red Parent Material (F21)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)	___	Very Shallow Dark Surface (F22)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)	___	Other (explain)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No** ___

Comments:

disturbed soil filled with brush and grubbings

Project Site:	Woodhaven, Magnetic Hill, Moncton			Date:	26-Jun-21		Sample Point:	11	Page	1	WPT #:	117
Client/owner:	CVR Homes			Field Investigator(s):	Theo Popma							
County:	Westmorland			Coordinates:	2625186.36; 7459259.39							
PID 70629431				Do normal environmental conditions exist on-site?			Yes	x	No			
If no, explain:												
Atypical Situation?	Yes	x	No		Explain:	Ditching, roadways, infilling, excavation, deforestation, artificial drainage						
Is this a potential **Problem Area?**			Yes		No	x	Explain:					

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		***Wetland Determination***
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes	x	No		x **YES** ☐ **NO**

Wetland Type: Shrub swamp
Rational for Determination: dried down shrub swamp

Vegetation

		%Cover		Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)					
1	*Betula populifolia*	15		x	*fac*
2	*Acer rubrum*	5		x	*fac*
3					
4					
5					
6					
		20	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Betula populifolia*	10		x	*fac*
2	*Acer rubrum*	10		x	*fac*
3	*Alnus incana*	15		x	*facw*
4	*Spiraea alba*	5			*fac*
5					
		40	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Rubus idaeus*	5		x	*fac*
2	*Equisetum sylvaticum*	5		x	*fac*
3	*Glyceria canadensis*	5		x	*obl*
4					
5					
		15	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 11 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)	x	Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)			
	Drainage Patterns (B10)		Geomorphic Position (D2)			
	Moss Trim Lines (B16)		Shallow Aquitard (D3)			
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)			
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)	A	OBL, FACW	0
	Saturation Visible on Aerial Imagery (C9)			B	UPL, FACU	0

Field Observations: A>B:=hydric

Surface Water Present?	Yes		No	x	Depth		**Wetland Hydrology Present?**	**Yes**	x	**No**
Saturation Present?	Yes		No	x	Depth					
High Watertable Present?	Yes		No	x	Depth					

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10cm	Organic							
10 to 15	10YR 4/1							
15 to	10YR 4/1	50	10YR 4/4	50				

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** x **No**

Comments:

Project Site: Woodhaven, Magnetic Hill, Moncton
Date: 26-Jun-21
Sample Point: 12 Page 1 WPT #: 127
Client/owner: CVR Homes
Field Investigator(s): Theo Popma
County: Westmorland
Coordinates: 2625384.79; 7459203.75
PID 70629431
Do normal environmental conditions exist on-site? Yes ☒ No ☐

If no, explain:

Atypical Situation? Yes ☒ No ☐ Explain: Ditching, roadways, infilling, excavation, deforestation, artificial drainage
Is this a potential **Problem Area?** Yes ☐ No ☒ Explain:

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes ☒	No ☐
Wetland Hydrology	Yes ☒	No ☐
Hydric Soils	Yes ☒	No ☐

Wetland Determination
☒ **YES** ☐ **NO**

Wetland Type: Forested Wetland
Rational for Determination: Dried-down forested wetland and shrubby bog

Vegetation

		%Cover	Dominant Species	Indicator Status
Tree Stratum: (Plot size: 9m2)				
1	*Picea rubens*	10	x	*fac*
2				
3				
4				
5				
6				
		10	= **Total Cover**	
Shrub Stratum: (Plot size: 5m2)				
1	*Rhododendron canadense*	25	x	*fac*
2	*Viburnum nudum*	10		*fac*
3	*Picea rubens*	10		*fac*
4	*Spiraea alba*	10		*fac*
5	*Betula populifolia*	10		*fac*
		65	= **Total Cover**	
Herb Stratum: (Plot Size: 1m2)				
1	*Chamaedaphne calyculata*	5	x	*obl*
2	*Cornus canadensis*	5	x	*fac*
3	*Kalmia angustifolia*	5	x	*fac*
4				
5				
		15	= **Total Cover**	

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	5
Total # of Dominant Species across all strata:	5
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:
x Rapid Test for Hydrolic Vegetation
x Dominance Test is >50%
___ Prevalence Index is≤3.0[1]
___ Morphological Adaptations[1](explain)
___ Problematic Hydrophytic Vegetation[1](explain)

[1] Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Comments

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 12 Page 2

Primary Hydrological Indicators: (minimum of one is required; check all that apply)

	Surface Water (A1)	x	Water Stained Leaves (B9)
	High Water Table (A2)		Aquatic Fauna (B13)
	Saturation (A3)		Marl Deposits (B15)
	Watermarks		Hydrogen Sulfide Odor (C1)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)
	Algal Mat of Crust (B4)		Recent Iron reduction in tilled Soils (C6)
	Iron Deposits (B5)		Thin Muck Surface (C7)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

	Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)
	Drainage Patterns (B10)		Geomorphic Position (D2)
	Moss Trim Lines (B16)		Shallow Aquitard (D3)
	Dry-Season Water Table (C2)		Microtopographic Relief (D4)
	Crayfish Burrows (C8)		FAC-Neutral Test (D5)
	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes		No	x	Depth
Saturation Present?	Yes		No	x	Depth
High Watertable Present?	Yes		No	x	Depth

Wetland Hydrology Present? **Yes** | x | **No**

Comments:

probably a skidder track looking like a s.v.d.

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 3cm	organic							
3 to 8	10YR 4/1							
8 to 20	10YR 4/1	60	7.5YR 4/4	40				
20 -	7.5 YR 4/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

	Histosol (A1)				
	Histic Epipedon (A2)		Stripped Matrix (S6)		
	Black Histic (A3)		Dark Surfaces (S7)		Coast Prairie Redox (A16)
	Hydrogen Sulfide (A4)		Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)
	Stratified Layers (A5)		Thin Dark Surface (S9)		Iron-Manganese Masses (F12)
	Depleted Below Dark Surface (A11)		Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)
	Thick Dark Surface (A12)	x	Depleted Matrix (F3)		Red Parent Material (F21)
	Sandy Mucky Mineral (S1)		Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)
	5cm Mucky Peat or Peat (S3)		Depleted Dark Surface (F7)		Other (explain)
	Sandy Gleyed Matrix (S4)		Redox Depressions (F8)		

Restrictive Layer Type (if observed): Depth: **Hydric Soil Present?** **Yes** | x | **No**

Comments:

Wetland Determination
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	x	No		
Wetland Hydrology	Yes	x	No		
Hydric Soils	Yes		No	x	

Wetland Type:
Rational for Determination:

Wetland Determination

	YES	x	**NO**

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover		Dominant Species	Indicator Status
1	*none*				
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)				
1	*Betula populifolia*	15		x	*fac*
2	*Spiraea alba*	15		x	*fac*
3	*Rhododendron canadense*	15		x	*fac*
4	*Alnus incana*	15		x	*facw*
5					
		60	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)				
1	*Juncus filiformis*	5		x	*obl*
2	*Chamaedaphne calyculata*	5		x	*obl*
3					
4					
5					
		10	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	6
Total # of Dominant Species across all strata:	6
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Hydrophytic Vegetation Indicators:

x	Rapid Test for Hydrolic Vegetation
x	Dominance Test is >50%
	Prevalence Index is≤3.0[1]
	Morphological Adaptations[1](explain)
	Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology Sample Point: 13 Page 2

Primary Hydrological Indicators: (minimum of one is required:check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators: (minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

A	OBL, FACW	0	
B	UPL, FACU	0	
A>B:=hydric			

Field Observations:

Surface Water Present?	Yes	___	No	x	Depth	___					
Saturation Present?	Yes	___	No	x	Depth	___					
High Watertable Present?	Yes	___	No	x	Depth	___	**Wetland Hydrology Present?**	**Yes**	x	**No**	___

Comments:

Soil Profile

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10	organic							
10 to	7.5 YR 4/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)				
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)		
___	Black Histic (A3)	___	Dark Surfaces (S7)	___	Coast Prairie Redox (A16)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)	___	5cm Mucky Peat or Peat (S3)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)	___	Iron-Manganese Masses (F12)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)	___	Piedmont Floodplain Soils (F19)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)	___	Red Parent Material (F21)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)	___	Very Shallow Dark Surface (F22)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)	___	Other (explain)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)		

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** ___ **No** x

Comments:

dried down peaty soil in top layer. Atypical

APPENDIX D

BACKGROUND INFORMATION

APPENDIX D: BACKGROUND INFORMATION

Legislation

These identified wetlands are subject to the *Watercourse and Wetland Alteration Regulation* (REG # 90-80), of the New Brunswick *Clean Water Act.* Any proposed alteration within these areas or within the 30 meter regulated upland buffer requires permitting through the Department of Environment, Watercourse and Wetlands Alteration Program. These areas may also be subject to *Environmental Impact Assessment* (REG 87-83) of the New Brunswick *Clean Environment Act* and other *Acts* and Regulations. It is the responsibility of the proponent to ensure that all regulatory requirements are met prior to development within these areas.

Methodology

Surveys were conducted according to the guidelines established by NBDELG based on the US Army Corps of Engineer Wetland Delineation Manual (1987), Field Indicators of Hydric Soils in the United States and Lichvar, 2005. The Flora of NB (Hinds, 2000) was consulted for plant identification.

Datapoints were analyzed for soil, hydrology and vegetation characteristics at several different locations (Figure 3). Color of soil strata are described in terms of texture, ‘value’ and ‘chroma’ according to a Munsell Soil Color Chart. The wetland delineation line was then completed by walking with a handheld Garmin 64ST GPS unit.

Datapoint locations and boundary-flag positions are provided as an attachment to this digital document as a Google Earth File. Coordinates are in UTM NAD83.

Wetland habitat was identified by establishing the presence of dominating hydric vegetation, of hydric soils and of hydrological markers such as surface water, soil saturation and channeling. The wetland edge was identified with paired Data Points (DPs) (wetland and upland) which straddled the boundary. Data sheets are included in Appendix C.

Sources:

The Canadian Wetland Classification System, 2nd ed. 1997. National Wetlands Working Group. Wetlands Research Center, University of Waterloo, ONT.
Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.
Field Indicators of Hydric Soils in the United States. 2006.
Hinds, H. 2000. The Flora of New Brunswick.
Lichvar, R., 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.
U.S. Army Corps of Engineers. 200X. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-0X-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
US Army Corps of Engineer Wetland Delineation Manual. 1987.
US Department of Fish and Wildlife. 1988. National List of Plant Species that occur in Wetlands
Regional Supplement to the Corps of Engineers Wetland Delineation Manual:Atlantic and Gulf Coastal Plain Region. 2010

STANDARD WETLAND DELINEATION

Belfry st. Moncton, NB

PID 00939744

June 16, 2020

For

Robert Bouchard
c/o CVR Home Improvements Inc.
46 Diamond Head Ct #113,
Moncton, NB
E1G 5S3

By

Theo Popma MSc. (Wetland Delineator) at Overdale Environmental Inc.
342 Highfield st.
Moncton, NB
E1C 5R6
tpopma@nb.sympatico.ca
www.Overdale.net
506-227-7605

Table of Contents

Introduction:

A Standard Wetland Delineation was conducted by Theo Popma, a recognized Delineator at Overdale Environmental Inc. The property (PID 00939744) is located on Belfry st.in Moncton, NB (Figure 1, Appendix A). The GeoNB wetlands map shows the potential for the presence of wetland on the PID (Figure 2). Note that the wetland polygon from the GeoNB map portal differs slightly from that of the Data Catalogue.

The delineation was conducted in accordance with the NB Wetland Conservation Policy and the Clean Environment Act.

It is recommended that this report be provided by the client to the New Brunswick Dept. of Environment for review.

Legislation

These identified wetlands are subject to the *Watercourse and Wetland Alteration Regulation* (REG # 90-80), of the New Brunswick *Clean Water Act.* Any proposed alteration within these areas or within the 30 meter regulated upland buffer requires permitting through the Department of Environment, Watercourse and Wetlands Alteration Program. These areas may also be subject to *Environmental Impact Assessment* (REG 87-83) of the New Brunswick *Clean Environment Act* and other *Acts* and Regulations. It is the responsibility of the proponent to ensure that all regulatory requirements are met prior to development within these areas.

Site Description (See Photos in Appendix D)

The southern portion of the site is intact but is affected by development on all sides in the form of infilling, resurfacing, ditching and other activities relating to home construction. A portion of previously existing wetland has been altered where an area has been cleared and partially filled. Forests are regenerating mixed hardwoods and softwoods and wetlands are generally dried-down Shrub Swamps where trees are slowly maturing in drier conditions. Marshy conditions persist in disturbed areas.

Methodology

Surveys were conducted according to the guidelines established by NBENV based on the US Army Corps of Engineer Wetland Delineation Manual (1987), Field Indicators of Hydric Soils in the United States and Lichvar, 2005. The Flora of NB (Hinds, 2000) was consulted for plant identification.

Datapoints were analyzed for soil, hydrology and vegetation characteristics at several different locations. Color of soil strata are described in terms of texture, ‘value’ and ‘chroma’ according to a Munsell Soil Color Chart. The wetland

delineation line was then completed by walking with a handheld Garmin GPS unit.

Datapoint locations and boundary-flag positions are listed in Appendix B. Coordinates are in UTM NAD83.

Wetland habitat was identified by establishing the presence of dominating hydric vegetation, of hydric soils and of hydrological markers such as surface water, soil saturation and channeling. The wetland edge was identified with paired Data Points (DPs) (wetland and upland) which straddled the boundary. Data sheets are included in Appendix C.

Results

Approximately 0.7Ha of Wetland habitat was delineated on the site. That includes 0.5Ha of intact Shrub Swamp and 0.2Ha of disturbed Marsh. The boundaries of wetland habitats on the PID are shown in the schematic in Figure 3. Photos of each datapoint location are shown in Appendix D. Below is a description of each Datapoint.

Datapoint 10: Upland

This point indicates the relatively undisturbed forested upland that surrounds wetland habitat on the site. It is dominated by mixed medium aged hardwood and softwood trees as well as typical shrub and herb flora including Wild Raisin (*Viburnum nudum*), Sheep Laurel (Kalmia angustifolia) and Bunchberry (*Cornus canadensis*). Hydrological indicators are generally absent since soils are not saturated and no water table was found after digging to shovel depth. Depletion of soils below Chroma 2 was not observed.

Datapoints 1, 2: Wetland

These points represent intact Forested/Shrub Wetland. This area was probably originally dominated by shrubs but has grown up with large saplings since being recently dried down. It occupies the majority of the southern portion of the site. Soils were saturated and depleted, water tables were high, organic layers were at least 20cm thick and naturally-occurring sparsely vegetated depressions were frequent.

Datapoints 3, 4, 5, 6, 9: Mosaic of complex Uplands

These points were all sampled in heavily disturbed areas. While vegetation and surface characteristics of these points were similar, soil samples showed variation in the color and thickness of layers. Hydrological indicators were also variable where skidder tracks could appear as sparsely vegetated depressions. It

is likely that some small wetland influence is present in these areas especially in early spring but that it cannot be reasonably isolated or delineated.
DPs 7, 8: Wetland

These points represent the area which has been cleared but where wetland conditions still persist in some form. Vegetation is dominated by graminoids commonly found in marshes such as Soft Rush (*Juncus effusus*), Silvery Sedge (*Carex cannescens*) and Canada Bluejoint (*Calamagrostis canadensis*). Soils were, again, variable due to the disturbance and included both depleted and histic horizons. While no saturation, inundation (except for some puddles) or high water table were observed, other hydrological indicators were evident such as drainage channels, cracked soil, sparsely vegetated depressions and water-stained leaves. This is likely due to partial flooding of the area during the spring or in the event of heavy rain.

Conclusion

This Wetland Delineation survey on PID 00939744 identified two major wetland types: Shrub Swamp and Marsh. The swamp was relatively intact but is indirectly impacted by nearby development. Recent tree growth is beginning to dominate the canopy. The marshy area has been heavily impacted by still displays wetland indicators. Other surrounding upland habitat is also heavily impacted by development and can be considered a complex of various soil, surface and vegetative characteristics including roads ditches, berms, tracks etc...

It should be noted that this is considered an Atypical Situation where human impacts affect analysis of wetland indicators.

Closing

I trust this information meets your current needs. Please feel free to contact me via telephone at (506) 227-7605 or by email at tpopma@nb.sympatico.ca if further clarification or explanation is required.

Sincerely,

Theo Popma BSc, MSc.

President, Overdale Environmental Inc.

Sources:

The Canadian Wetland Classification System, 2nd ed. 1997. National Wetlands Working Group. Wetlands Research Center, University of Waterloo, ONT.

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Field Indicators of Hydric Soils in the United States. 2006.

Hinds, H. 2000. The Flora of New Brunswick.

Lichvar, R., 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.

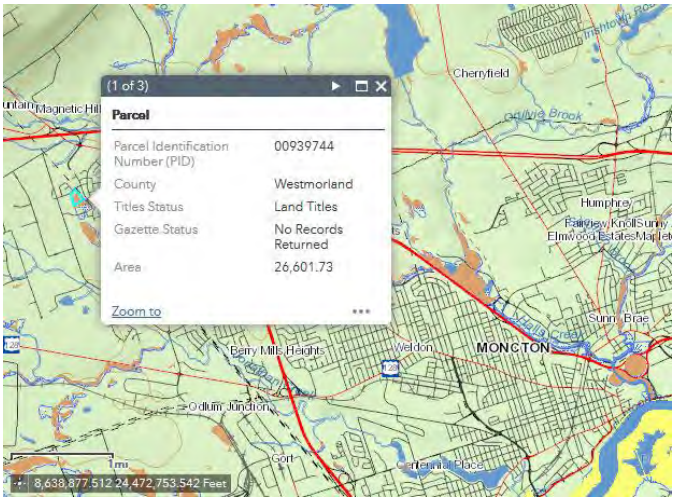
U.S. Army Corps of Engineers. 200X. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-0X-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

US Army Corps of Engineer Wetland Delineation Manual. 1987.

US Department of Fish and Wildlife. 1988. National List of Plant Species that occur in Wetlands.

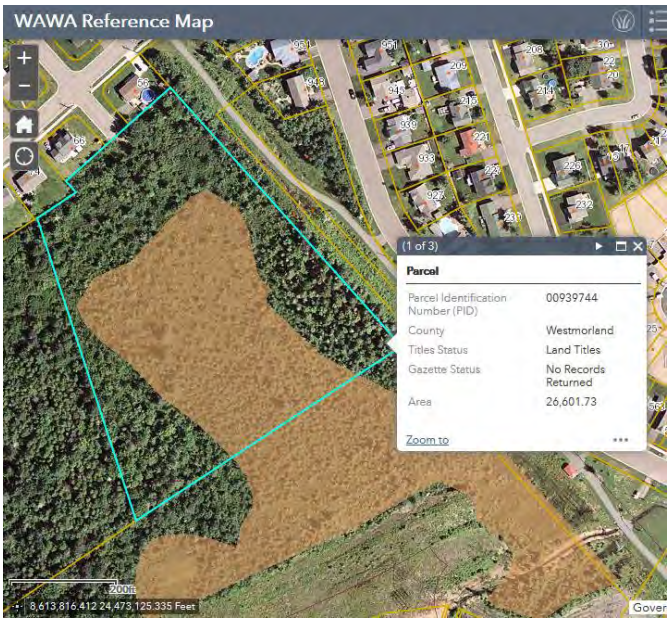
APPENDIX A: FIGURES

Figure 1. Survey Area



CVR Home Improvements Inc.	Figure 1	Project Location	Overdale Environmental Inc.

Figure 2. Wetland Boundary on and near PID 00939744 according to GeoNB and the GeoNB Data Catalogue



CVR Home Improvements Inc.	Figure 2	Top:GeoNB Wetlands Map Bottom: GeoNB Data Catalogue	Overdale Environmental Inc.

Figure 3. Wetland Delineation Schematic

CVR Home Improvements Inc.	Figure 3	WL polygon and Datapoints	Overdale Environmental Inc.

APPENDIX B: DATAPOINT AND FLAG POSITIONS

Boundary Points

Label	Latitude	Longitude
457	46.122489	-64.879113
458	46.122564	-64.879203
459	46.122645	-64.879337
460	46.122678	-64.87935
461	46.12263	-64.879476
462	46.122704	-64.879656
463	46.122769	-64.879678
464	46.12285	-64.879773
465	46.122928	-64.879842
466	46.122836	-64.879992
467	46.122781	-64.880073
481	46.122741	-64.880089
482	46.122641	-64.880182
483	46.122553	-64.880266
484	46.122469	-64.880353
485	46.12253	-64.880432
486	46.12259	-64.880398
487	46.122648	-64.880434
488	46.122646	-64.880473
489	46.122691	-64.880531
490	46.122679	-64.880573
491	46.122693	-64.880633
492	46.122718	-64.88066
493	46.122728	-64.880636
494	46.122773	-64.880623
495	46.122829	-64.880687
496	46.122843	-64.880771
497	46.122919	-64.880852
498	46.122956	-64.880913
499	46.122964	-64.881024
500	46.12284	-64.880977
501	46.122666	-64.880906
502	46.12259	-64.880867
503	46.122526	-64.880863
504	46.122469	-64.88084
505	46.122369	-64.880783
506	46.122326	-64.880715
507	46.12231	-64.880503
508	46.122221	-64.880429
509	46.122116	-64.8804
510	46.121909	-64.880339
511	46.122017	-64.880326

Datapoints

Label	Name on GPS	Latitude	Longitude
1	456	46.122553	-64.879243
2	468	46.122536	-64.87995
3	471	46.12344	-64.881059
4	472	46.123296	-64.88116
5	473	46.122104	-64.880898
6	474	46.12189	-64.880672
7	478	46.122463	-64.880557
8	479	46.122728	-64.880734
9	480	46.122742	-64.880107
10	449	46.12316	-64.87962

APPENDIX C: WETLAND DATASHEETS

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	1	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.12255; 64.87924			
PID	939744		Do normal environmental conditions exist on-site?		Yes [x]	No [ ]	

If no, explain:

Atypical Situation? Yes [x] No [ ] Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes [ ] No [x] Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes [x]	No [ ]
Wetland Hydrology	Yes [x]	No [ ]
Hydric Soils	Yes [x]	No [ ]

Wetland Type: Shrub Swamp

Rational for Determination: Shrub dominated wetland

Wetland Determination

[x] **YES** [ ] **NO**

Vegetation

	Tree Stratum: (Plot size: 9m2)		%Cover		Dominant Species	Indicator Status
1	*Larix laricina*		15		x	*fac*
2	*Acer rubrum*		5			*fac*
3	*Betula populifolia*		5			*fac*
4	*Picea rubens*		5			*fac*
5						
6						
			30	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)					
	Alnus incana		20		x	*facw*
	Kalmia angustifolia		10		x	*fac*
1	*Larix laricina*		10		x	*fac*
2	*Acer rubrum*		10		x	*fac*
3	*Betula populifolia*		10		x	*fac*
4	*Spiraea alba*		10		x	*fac*
5	*Viburnum nudum var. cassinoi*		10		x	*fac*
			50	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)					
1	*Iris versicolor*		10		x	*facw+*
2	*Calamagrostis canadensis*		10		x	*facw*
3						
4						
5						
			20	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	13
Total # of Dominant Species across all strata:	13
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- [x] Rapid Test for Hydrolic Vegetation
- [x] Dominance Test is >50%
- [ ] Prevalence Index is≤3.0[1]
- [ ] Morphological Adaptations[1](explain)
- [ ] Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
x	High Water Table (A2)	___	Aquatic Fauna (B13)
x	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___							
Water Table Present?	Yes x	No ___	Depth 30	**Wetland Hydrology Present?**	**Yes**	x	**No** ___			
Saturation Present?	Yes x	No ___	Depth 0							

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 20							Organic Sphagnum	
20 to 30cm	7.5YR 5/2						Sandy clay	

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
x	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** | x | **No** ___

Comments:

Project Site:	Belfry st., Moncton	Date:	11-Jun-20	Sample Point: 2	Page #: 1
Client/owner:	Robert Bouchard	Field Investigator(s):	Theo Popma		
County:	Westmorland	Coordinates:	46.12254; 64.87995		
PID 939744		Do normal environmental conditions exist on-site?	Yes x	No	

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes x	No
Hydric Soils	Yes x	No

Wetland Determination

x **YES** **NO**

Wetland Type: Forested Wetland

Rational for Determination: Trees and saplings present

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1	*Larix laricina*	5	x	*fac*
2	*Acer rubrum*	5	x	*fac*
3	*Betula populifolia*	5	x	*fac*
4				
5				
6				
		15 =	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)			
	Spiraea alba			*fac*
1	*Larix laricina*	5	x	*fac*
2	*Acer rubrum*	5	x	*fac*
3	*Betula populifolia*	5	x	*fac*
4	*Alnus incana*	5	x	*facw*
5	*Rhododendron canadense*	5	x	*fac*
		25 =	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)			
1	*Kalmia angustifolia*	5	x	*fac*
2	*Maianthemum trifolium*	5	x	*obl*
3	*Calamagrostis canadensis*	5	x	*facw*
4	*Osmunda cinnamomea*	5	x	*fac*
5				
		20 =	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	13
Total # of Dominant Species across all strata:	13
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
x	High Water Table (A2)	___	Aquatic Fauna (B13)
x	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes	___	No	x	Depth	___					
Water Table Present?	Yes	x	No	___	Depth	24	**Wetland Hydrology Present?**	**Yes**	x	**No**	___
Saturation Present?	Yes	x	No	___	Depth	0					

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 20cm							organic	
20 -	10YR 5/2							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
x	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** | x | **No** | ___

Comments:

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	3	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.12344; 64.88106			
PID 939744			Do normal environmental conditions exist on-site?		Yes x	No	

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes	No x
Hydric Soils	Yes	No x

Wetland Determination

YES | x | NO

Wetland Type:

Rational for Determination:

Vegetation

	Tree Stratum: (Plot size: 9m2)		%Cover		Dominant Species	Indicator Status
1	*Betula populifolia*		15		x	*fac*
2	*Acer rubrum*		10		x	*fac*
3						
4						
5						
6						
			25	=	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)					
		Ilex verticillata	10		x	*facw+*
1		*Betula populifolia*	20		x	*fac*
2		*Acer rubrum*	10		x	*fac*
3		*Spiraea alba*	5		x	*fac*
4		*Populus tremuloides*	10		x	*fac*
5		*Viburnum nudum*	5		x	*fac*
			50	=	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)					
1		*Calamagrostis canadensis*	20		x	*facw*
2		*Onoclea sensibilis*	20		x	*facw*
3		*Doellingeria umbellata*	10		x	*fac*
4		*Pteridium aquilinum*	10		x	*facu*
5		*Aralia nudicaulis*	5		x	*fac*
			65	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	12
Total # of Dominant Species across all strata:	13
% of Dominant Species that are OBL,FACW,FAC:	92.3

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes x No

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___ Surface Water (A1)	___ Water Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Watermarks	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat of Crust (B4)	___ Recent Iron reduction in tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
___ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators:(minimum of two required)

___ Surface Soil Cracks (B6)	___ Stunted or Stressed Plants (D1)
___ Drainage Patterns (B10)	___ Geomorphic Position (D2)
___ Moss Trim Lines (B16)	___ Shallow Aquitard (D3)
___ Dry-Season Water Table (C2)	___ Microtopographic Relief (D4)
___ Crayfish Burrows (C8)	___ FAC-Neutral Test (D5)
___ Saturation Visible on Aerial Imagery (C9)	

Field Observations:

Surface Water Present? Yes ___ No x Depth ___

Water Table Present? Yes ___ No x Depth ___ **Wetland Hydrology Present?** **Yes** ___ **No** x

Saturation Present? Yes ___ No x Depth ___

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 12							Organic	
12 to 15cm	10YR 5/2	50	7.5YR 5/4				clay	
15 to 30	7.5 YR 5/4						clay	

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)	___ Sandy Redox (S5)
___ Histic Epipedon (A2)	___ Stripped Matrix (S6)
___ Black Histic (A3)	___ Dark Surfaces (S7)
___ Hydrogen Sulfide (A4)	___ Polyvalue Below Surface (S8)
___ Stratified Layers (A5)	___ Thin Dark Surface (S9)
___ Depleted Below Dark Surface (A11)	___ Loamy Gleyed Matrix (F2)
___ Thick Dark Surface (A12)	___ Depleted Matrix (F3)
___ Sandy Mucky Mineral (S1)	___ Redox Dark Surface (F6)
___ 5cm Mucky Peat or Peat (S3)	___ Depleted Dark Surface (F7)
___ Sandy Gleyed Matrix (S4)	___ Redox Depressions (F8)

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** ___ **No** x

Comments:

Project Site:	Belfry st., Moncton	Date:	11-Jun-20	Sample Point: 4	Page #: 1
Client/owner:	Robert Bouchard	Field Investigator(s):	Theo Popma		
County:	Westmorland	Coordinates:	46.1233; 64.88116		
PID 939744		Do normal environmental conditions exist on-site?		Yes x	No

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes x	No
Hydric Soils	Yes	No x

Wetland Type:

Rational for Determination:

Wetland Determination

YES x NO

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1	*Acer rubrum*	5	x	*fac*
2				
3				
4				
5				
6				
		5 =	**Total Cover**	
	Shrub Stratum: (Plot size: 5m2)			
	Rubus idaeus	10	x	*fac*
1	*Betula populifolia*	10	x	*fac*
2	*Alnus incana*	15	x	*facw*
3	*Acer rubrum*	10	x	*fac*
4	*Salix bebbiana*	5	x	*fac*
5	*Spiraea tomentosa*	5	x	*fac*
		45 =	**Total Cover**	
	Herb Stratum: (Plot Size: 1m2)			
1	*Juncus effusus*	10	x	*facw*
2	*Calamagrostis canadensis*	10	x	*facw*
3	*Carex echinata*	5	x	*obl*
4	*Symphyotrichum novi-belgii*	5	x	*fac*
5				
		30 =	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	11
Total # of Dominant Species across all strata:	11
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes x No

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	x	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___						
Water Table Present?	Yes ___	No x	Depth ___	**Wetland Hydrology Present?**	**Yes**	x	**No**	___	
Saturation Present?	Yes ___	No x	Depth ___						

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 5cm	7.5YR 2.5/1						clay	
5 to 10cm	7.5YR 5/4	50	7.5YR 5/1				clay	
10 to	7.5YR 5/4						clay	

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** ___ | **No** x

Comments:

value and thickness of depleted layer too small for depleted matrix

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	5	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.1221; 64.8809			
PID	939744		Do normal environmental conditions exist on-site?		Yes x	No	

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes	No x
Hydric Soils	Yes x	No

Wetland Determination

YES x NO

Wetland Type:

Rational for Determination:

Vegetation					
Tree Stratum: (Plot size: 9m2)		%Cover		Dominant Species	Indicator Status
1					
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Viburnum nudum*	10			*fac*
2	*Betula populifolia*	20			*fac*
3	*Acer rubrum*	20			*fac*
4	*Spiraea tomentosa*	10			*fac*
5	*Spiraea alba*	10			*fac*
		70	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Comptonia peregrina*	5			*upl*
2	*Calamagrostis canadensis*	25			*facw*
3	*Vaccinium angustifolium*	5			*fac*
4	*Iris versicolor*	2			*facw+*
5					
		37	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	9
% of Dominant Species that are OBL,FACW,FAC:	88.9

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes x No

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	x	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___						
Water Table Present?	Yes ___	No x	Depth ___	**Wetland Hydrology Present?**	**Yes** ___	**No** x			
Saturation Present?	Yes ___	No x	Depth ___						

Comments:

Skidder tracks resemble sparsely vegetated concave depressions but are not the same

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 4cm							Organic	
4 to 6cm	7.5 YR 2.5/1							
6 to 13.5	7.5YR 5/1	30	7.5YR 5/4					
13.5 to	7.5YR 5/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	x	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** x | **No** ___

Comments:

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	6	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.12189; 64.88067			
PID	939744		Do normal environmental conditions exist on-site?		Yes	x	No

If no, explain:

Atypical Situation? Yes [x] No [ ] Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes [ ] No [x] Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes [x]	No [ ]
Wetland Hydrology	Yes [ ]	No [x]
Hydric Soils	Yes [ ]	No [x]

Wetland Type:

Rational for Determination:

Wetland Determination

[ ] **YES** [x] **NO**

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1	*none*			
2				
3				
4				
5				
6				
		0 =	**Total Cover**	

	Shrub Stratum: (Plot size: 5m2)			
1	*Alnus incana*	15	x	*facw*
2	*Betula populifolia*	20	x	*fac*
3	*Spiraea alba*	5		*fac*
4	*Spiraea tomentosa*	5		*fac*
5	*Acer rubrum*	5		*fac*
		50 =	**Total Cover**	

	Herb Stratum: (Plot Size: 1m2)			
1	*Carex echinata*	5		*obl*
2	*Calamagrostis canadensis*	20	x	*facw*
3	*Symphyotrichum puniceum*	5		*facw*
4	*Vaccinium angustifolium*	5		*fac*
5				
		35 =	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:

Total # of Dominant Species across all strata:

% of Dominant Species that are OBL,FACW,FAC: ####

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- [ ] Rapid Test for Hydrolic Vegetation
- [ ] Dominance Test is >50%
- [ ] Prevalence Index is≤3.0[1]
- [ ] Morphological Adaptations[1](explain)
- [ ] Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
___	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	x	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___						
Water Table Present?	Yes ___	No x	Depth ___	**Wetland Hydrology Present?**	**Yes** ___	**No** x			
Saturation Present?	Yes ___	No x	Depth ___						

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 3cm							Organic	
3 to 10cm	7.5YR 2.5/1							
10cm -	7.5YR 5/8							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** ___ | **No** x

Comments:

Project Site:	Belfry st., Moncton	Date:	11-Jun-20	Sample Point: 7	Page #: 1
Client/owner:	Robert Bouchard	Field Investigator(s):	Theo Popma		
County:	Westmorland	Coordinates:	46.12246; 64.88056		
PID 939744		Do normal environmental conditions exist on-site?		Yes [x]	No [ ]

If no, explain:

Atypical Situation? Yes [x] No [ ] Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes [ ] No [x] Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes [x]	No [ ]
Wetland Hydrology	Yes [x]	No [ ]
Hydric Soils	Yes [x]	No [ ]

Wetland Type: Marsh

Rational for Determination: Grmainoid vegetation dominant

Wetland Determination

[x] **YES** [ ] **NO**

Vegetation

	Tree Stratum: (Plot size: 9m2)	%Cover		Dominant Species	Indicator Status
1	*none*				
2					
3					
4					
5					
6					
		0	=	**Total Cover**	

	Shrub Stratum: (Plot size: 5m2)				
1	*Populus tremuloides*	5		x	*fac*
2	*Betula populifolia*	5		x	*fac*
3	*Salix bebbiana*	5		x	*fac*
4	*Spiraea alba*	5		x	*fac*
5					
		20	=	**Total Cover**	

	Herb Stratum: (Plot Size: 1m2)				
1	*Calamagrostis canadensis*	10		x	*facw*
2	*Juncus effusus*	10		x	*facw*
3	*Juncus tenuis*	10		x	*fac*
4	*Juncus articulatus*	10		x	*obl*
5	*Eupatorium perfoliatum*	5			*facw*
		45	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- [x] Rapid Test for Hydrolic Vegetation
- [x] Dominance Test is >50%
- [ ] Prevalence Index is≤3.0[1]
- [ ] Morphological Adaptations[1](explain)
- [ ] Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

x	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
x	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	x	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No	x	Depth	___				
Water Table Present?	Yes ___	No	x	Depth	___	**Wetland Hydrology Present?**	**Yes**	x	**No** ___
Saturation Present?	Yes ___	No	x	Depth	___				

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 1cm							Organic	
1 to 6cm	7.5YR 5/1	20	7.5YR 5/8					
6 -	7.5YR 5/8							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	x	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** | x | **No** ___

Comments:

Project Site:	Belfry st., Moncton	Date:	11-Jun-20	Sample Point: 8	Page #: 1
Client/owner:	Robert Bouchard	Field Investigator(s):	Theo Popma		
County:	Westmorland	Coordinates:	46.12273; 64.88073		
PID 939744		Do normal environmental conditions exist on-site?		Yes x	No

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes x	No
Hydric Soils	Yes x	No

Wetland Type: Marsh

Rational for Determination: Graminoid dominants

Wetland Determination

x **YES** **NO**

Vegetation

Tree Stratum: (Plot size: 9m2)		%Cover		Dominant Species	Indicator Status
1					
2					
3					
4					
5					
6					
		0	=	**Total Cover**	
Shrub Stratum: (Plot size: 5m2)					
1	*Salix bebbiana*	10		x	*fac*
2	*Spiraea tomentosa*	5		x	*fac*
3	*Viburnum nudum*	5		x	*fac*
4					
5					
		20	=	**Total Cover**	
Herb Stratum: (Plot Size: 1m2)					
1	*Carex scabrata*	15		x	*obl*
2	*Calamagrostis canadensis*	25		x	*facw*
3	*Carex echinata*	5			*obl*
4	*Juncus effusus*	10			*facw*
5	*Carex canescens*	5			*obl*
		60	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	8
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	___	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

x	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
x	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	x	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No	x	Depth	___				
Water Table Present?	Yes ___	No	x	Depth	___	**Wetland Hydrology Present?**	**Yes**	x	**No** ___
Saturation Present?	Yes ___	No	x	Depth	___				

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 30cm							Organic	
30 to	7.5YR 4/1						sand	

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
x	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** | x | **No** ___

Comments:

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	9	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.12274; 64.88011			
PID	939744		Do normal environmental conditions exist on-site?		Yes	x	No

If no, explain:

Atypical Situation? Yes [x] No [ ] Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes [ ] No [x] Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes [x]	No [ ]
Wetland Hydrology	Yes [x]	No [ ]
Hydric Soils	Yes [ ]	No [x]

Wetland Type:

Rational for Determination:

Wetland Determination

[ ] **YES** [x] **NO**

Vegetation

Tree Stratum: (Plot size: 9m2)		%Cover		Dominant Species	Indicator Status
1	*none*				
2					
3					
4					
5					
6					
		0	=	**Total Cover**	

Shrub Stratum: (Plot size: 5m2)					
1	*none*				
2					
3					
4					
5					
		0	=	**Total Cover**	

Herb Stratum: (Plot Size: 1m2)					
1	*Solidago canadensis*	10		x	*fac*
2	*Trifolium repens*	10		x	*facu*
3	*Festuca rubra*	10		x	*fac*
4	*Tussilago farfara*	10		x	*fac*
5	*Juncus effusus*	10		x	*facw*
		50	=	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	4
Total # of Dominant Species across all strata:	5
% of Dominant Species that are OBL,FACW,FAC:	80

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- [x] Rapid Test for Hydrolic Vegetation
- [x] Dominance Test is >50%
- [ ] Prevalence Index is≤3.0[1]
- [ ] Morphological Adaptations[1](explain)
- [ ] Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? **Yes** x **No**

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___	Surface Water (A1)	x	Water Stained Leaves (B9)
___	High Water Table (A2)	___	Aquatic Fauna (B13)
___	Saturation (A3)	___	Marl Deposits (B15)
___	Watermarks	___	Hydrogen Sulfide Odor (C1)
___	Sediment Deposits (B2)	___	Oxidized Rhizospheres on Living Roots (C3)
___	Drift Deposits (B3)	___	Presence of Reduced Iron (C4)
___	Algal Mat of Crust (B4)	___	Recent Iron reduction in tilled Soils (C6)
___	Iron Deposits (B5)	___	Thin Muck Surface (C7)
___	Inundation Visible on Aerial Imagery (B7)	___	Other (Explain in Remarks)
x	Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators:(minimum of two required)

___	Surface Soil Cracks (B6)	___	Stunted or Stressed Plants (D1)
___	Drainage Patterns (B10)	___	Geomorphic Position (D2)
___	Moss Trim Lines (B16)	___	Shallow Aquitard (D3)
___	Dry-Season Water Table (C2)	___	Microtopographic Relief (D4)
___	Crayfish Burrows (C8)	___	FAC-Neutral Test (D5)
___	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	Yes ___	No x	Depth ___						
Water Table Present?	Yes ___	No x	Depth ___	**Wetland Hydrology Present?**	**Yes**	x	**No**	___	
Saturation Present?	Yes ___	No x	Depth ___						

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features					
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 -	7.5YR 5/4						Clay	

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___	Histosol (A1)	___	Sandy Redox (S5)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)
___	Black Histic (A3)	___	Dark Surfaces (S7)
___	Hydrogen Sulfide (A4)	___	Polyvalue Below Surface (S8)
___	Stratified Layers (A5)	___	Thin Dark Surface (S9)
___	Depleted Below Dark Surface (A11)	___	Loamy Gleyed Matrix (F2)
___	Thick Dark Surface (A12)	___	Depleted Matrix (F3)
___	Sandy Mucky Mineral (S1)	___	Redox Dark Surface (F6)
___	5cm Mucky Peat or Peat (S3)	___	Depleted Dark Surface (F7)
___	Sandy Gleyed Matrix (S4)	___	Redox Depressions (F8)

Restrictive Layer Type (if observed | Depth: | **Hydric Soil Present?** | **Yes** ___ | **No** x

Comments:

Project Site:	Belfry st., Moncton		Date:	11-Jun-20	Sample Point:	10	Page #: 1
Client/owner:	Robert Bouchard		Field Investigator(s):	Theo Popma			
County:	Westmorland		Coordinates:	46.12316; 64.87962			
PID	939744		Do normal environmental conditions exist on-site?		Yes x	No	

If no, explain:

Atypical Situation? Yes x No Explain: Infilling, ditching, bulldozing

Is this a potential **Problem Area?** Yes No x Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes x	No
Wetland Hydrology	Yes	No x
Hydric Soils	Yes	No x

Wetland Determination

YES | x | NO

Wetland Type:

Rational for Determination:

Vegetation

Tree Stratum: (Plot size: 9m2)		%Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	20	x	*fac*
2	*Acer rubrum*	20	x	*fac*
3	*Picea glauca*	10		*fac*
4	*Betula populifolia*	10		*fac*
5				
6				
		60 =	**Total Cover**	

Shrub Stratum: (Plot size: 5m2)				
1	*Abies balsamea*	10	x	*fac*
2	*Betula populifolia*	10	x	*fac*
3	*Acer rubrum*	10	x	*fac*
4	*Viburnum nudum*	10	x	*fac*
5				
		40 =	**Total Cover**	

Herb Stratum: (Plot Size: 1m2)				
1	*Kalmia angustifolia*	25	x	*fac*
2	*Vaccinium angustifolium*	25	x	*fac*
3	*Cornus canadensis*	5		*fac*
4				
5				
		55 =	**Total Cover**	

Comments

Dominance Test Worksheet:

# of Dominant Species that are OBL,FACW,FAC:	11
Total # of Dominant Species across all strata:	11
% of Dominant Species that are OBL,FACW,FAC:	100

Prevalence Index Worksheet:

	Total %Cover of:	Multiply by:	
OBL Species		x 1 =	0
FACW Species		x 2 =	0
FAC Species		x 3 =	0
FACU Species		x 4 =	0
ULP Species		x 5 =	0
Column Totals:	0		0

Prevalence Index = B/A = ##

Hydrophytic Vegetation Indicators:

- x Rapid Test for Hydrolic Vegetation
- x Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1](explain)
- ___ Problematic Hydrophytic Vegetation[1](explain)

[1]Indicators of hydric soil and weland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes x No

Hydrology

Primary Hydrological Indicators:(minimum of one is required;check all that apply)

___ Surface Water (A1)	___ Water Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Watermarks	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat of Crust (B4)	___ Recent Iron reduction in tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
___ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators:(minimum of two required)

___ Surface Soil Cracks (B6)	___ Stunted or Stressed Plants (D1)
___ Drainage Patterns (B10)	___ Geomorphic Position (D2)
___ Moss Trim Lines (B16)	___ Shallow Aquitard (D3)
___ Dry-Season Water Table (C2)	___ Microtopographic Relief (D4)
___ Crayfish Burrows (C8)	___ FAC-Neutral Test (D5)
___ Saturation Visible on Aerial Imagery (C9)	

Field Observations:

Surface Water Present? Yes ___ No x Depth ___

Water Table Present? Yes ___ No x Depth ___ **Wetland Hydrology Present?** **Yes** ___ **No** x

Saturation Present? Yes ___ No x Depth ___

Comments:

Soil Profile

Profile Description:(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				
	Color(moist)	%	Color(moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10cm							Organic	
10 to 25cm	10YR 4/3							
25 -	7.5 YR 5/4							

[1]Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.2Location:PL=Pore Lining,M=Matrix

Hydric Soil Indicators:

___ Histosol (A1)	___ Sandy Redox (S5)
___ Histic Epipedon (A2)	___ Stripped Matrix (S6)
___ Black Histic (A3)	___ Dark Surfaces (S7)
___ Hydrogen Sulfide (A4)	___ Polyvalue Below Surface (S8)
___ Stratified Layers (A5)	___ Thin Dark Surface (S9)
___ Depleted Below Dark Surface (A11)	___ Loamy Gleyed Matrix (F2)
___ Thick Dark Surface (A12)	___ Depleted Matrix (F3)
___ Sandy Mucky Mineral (S1)	___ Redox Dark Surface (F6)
___ 5cm Mucky Peat or Peat (S3)	___ Depleted Dark Surface (F7)
___ Sandy Gleyed Matrix (S4)	___ Redox Depressions (F8)

Restrictive Layer Type (if observed Depth: **Hydric Soil Present?** **Yes** ___ **No** x

Comments:

Insufficient depletion

APPENDIX D: PHOTOS

CVR Home Improvements Inc.	Datapoint 1	Wetland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 2	Wetland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 3	Upland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 4	Upland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 5	Upland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 6	Upland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 7	Wetland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 8	Wetland	Overdale Environmental Inc.

CVR Home Improvements Inc.	Datapoint 9	Upland	Overdale Environmental Inc.

(No soil pit photo available)

CVR Home Improvements Inc.	Datapoint 10	Upland	Overdale Environmental Inc.

APPENDIX H

Bird Survey Report (2021)

hive ENGINEERING

Aster Group Environmental Services Co-op
28 High Marsh Rd
Sackville NB, E4L 1K2
506-536-1260
www.astergroup.ca

CV Homes Bird Survey
June 21, 2021

For

For Hive Engineering
Andrea Kalafut, M.Sc.E., P.Eng.

Submitted by

Roland Chiasson
Aster Group
28 High Marsh Rd
Sackville NB
E4L 1K2
506-536-7348
roland.chiasson@astergroup.ca

Introduction
A bird survey was carried out on June 18, 2021, on two parcels of land with PID Numbers: 05465255 and 00939744. This site is slated for a future housing development, to be developed by CV Homes.

Methodology
Two bird data bases were consulted, the Maritime Bird Breeding Atlas and the Atlantic Canada Conservation Data Centre (AC CDC). Results from these two data bases can be found in the appendix.

The following recognized bird survey techniques were used to survey for breeding birds: Point Counts, Maritime Breeding Bird Atlas and Common Nighthawk survey protocols. Point counts were based on the North American Bird breeding survey (https://www.canada.ca/en/environment-climate-change/services/bird-surveys/landbird/north-american-breeding/overview.html), with two differences. Point counts lasted ten minutes instead of three minutes and point count locations were spaced closer together than usual, often less than one hundred meters, as compared to 200 hundred meters. Both modifications were to ensure that all habitat types were surveyed for birds. Special attention was given to bird species at risk potentially on site. This was based on the availability of suitable habitat and if they were observed or heard. Techniques developed by the Maritime Breeding Bird Atlas, (https://www.mba-aom.ca), use bird behavior to determine if birds are breeding. The Common Nighthawk survey was carried out before sun rise at 5:15 am, and was based on ”Surveying Whip-poor-wills & Nightjars in The Land Between Canadian Nightjar Survey Protocol - 2020” (https://www.thelandbetween.ca/wp-content/uploads/2020/05/TLB-Nightjar-Survey-Protocol-1.pdf).

Results

Based on the bird data bases consulted, some species at risk and other birds of conservation interest could have been present. Based on the desktop study of the AC CDC data, the following bird species at risk or species of conservation interest that have been observed within 100 kilometers and where suitable habitat is available: Bobolink (*Dolichonyx oryzivorus)*, Rusty Blackbird (*Euphagus carolinus)*, Common Nighthawk (*Chordeiles minor)*, and Eastern Kingbird (*Tyrannus tyrannus).* However, no species at risk or other species of conservation interest were observed or heard. Limited habitat is available for species at risk. About half of the site has been bulldozed and or cleared of brush. There has been some regeneration of young hardwoods on the site. Many of the species that were seen were birds that are well suited to this type of habitat (see picture). No Common Nighthawks were seen or heard before sun rise.

Twenty-four species of birds were observed. The five most numerous birds observed were: Cedar Waxwings (Bombycilla cedrorum*)*, Alder Flycatcher (*Empidonax alnorum*), Red-Eyed Vireo (*Vireo olivaceus*), Song Sparrow (Melospiza melodia) and Veery (*Melospiza melodia*). These five birds were not necessarily abundant but were seen more frequently because the point counts were close together and the birds were more than likely counted twice.

Weather conditions were ideal; light winds, clear sky, temperature range from 9 to 11 and within a week of a full moon. Please find a summary of the results below with the number of times birds were observed. A complete data set can be found in the appendix.

Birds observated	Scientific Name	# of Observations	Other Species observed
Cedar Waxwing	*Bombycilla cedrorum*	10	White-tailed Deer
Alder Flycatcher	*Empidonax alnorum*	9	Green Frog
Red-eyed Vireo	*Vireo olivaceus*	8	Red Fox
Song Sparrow	*Melospiza melodia*	7	
Veery	*Catharus fuscescens*	6	
American Crow	*Corvus brachyrhynchos*	5	
Black-capped Chickadee	*Poecile atricapillus*	4	
Chestnut-sided Warbler	*Setophaga pensylvanica*	4	
Common Grackle	*Quiscalus quiscula*	4	
Common Yellowthroat	*Geothlypis trichas*	4	
Northern Flicker	*Colaptes auratus*	4	
White-throated Sparrow	*Zonotrichia albicollis*	4	
American Redstart	*Setophaga ruticilla*	3	
Ringed-necked Pheasant	*Phasianus colchicus*	3	
American Goldfinch	*Carduelis tristis*	2	
Veery	*Catharus fuscescens*	2	
American Robin	*Turdus migratorius*	1	
American Woodcock	*Scolopax minor*	1	
Black and White Warbler	*Mniotilta varia*	1	
European Starling	*Sturnus vulgaris*	1	
Magnolia Warbler	*Setophaga magnolia*	1	
Purple Finch	*Carpodacus purpureus*	1	
Swamp Sparrow	*Melospiza georgiana*	1	
Yellow Warbler	*Setophaga petechia*	1	

Recommendations
Save some of the older trees for landscaping values and to provide habitat for birds.

Some of the remaining original bog/wetland habitat can be seen below in the picture with some larger trees in the background. Keeping areas like this provides good habitats for birds.

Appendix (in separate files)

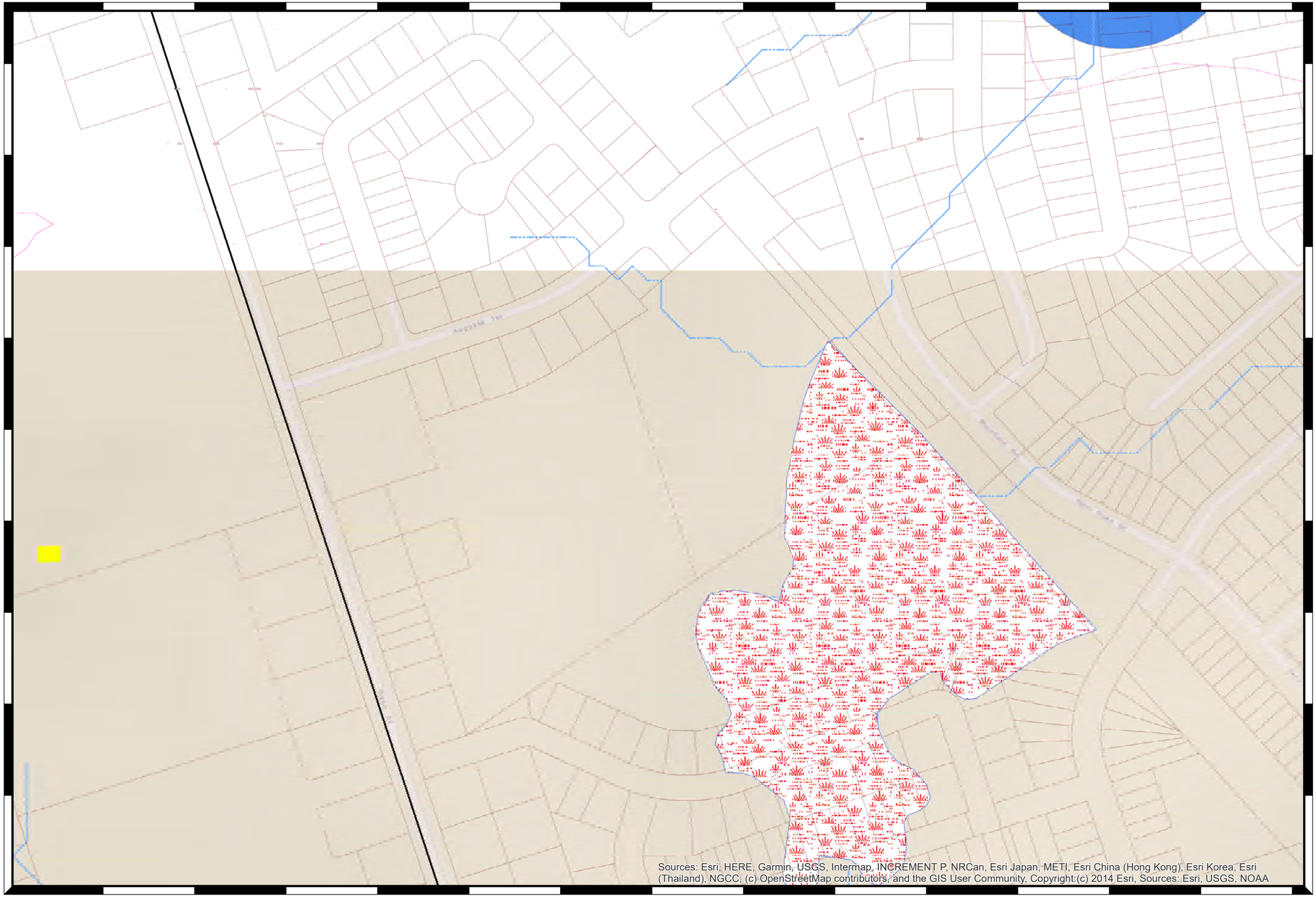
ACCDC Data for this region

Maritime Bird Breeding Atlas Results for this region

Bird Survey Results from this study

APPENDIX I

Archaeology Mapping



N
W E
S

Legend

SymbolID
- 0
- PreContact2021
- Historic2021
- June52012UndefinedSites
- June52012SuspectedShipwrecks
- June52012Shipwrecks
- June52012SuspectedPlaneCrash
- June52012RecordedPlaneCrash
- June52012ProtoHistoricSite
- June52012Cemeteries
- New Brunswick Portage Routes

waterbody
- <all other values>

WATER_CODE
- AQ
- LK
- ON
- PN
- RV
- SL
- WA
- PIDs

Roads
- <all other values>

TRANSPORTA
- 1
- 3
- 2
- PreContactAug2021_Buffer
- HistoricJanuary2020_Buffer
- PortageBuffer4
- PortageBuffer
- wetland

watercourse
- <all other values>

WATERCOURS
- 1
- 2
- Predicted Flow Channel

Slope_demnb2

<VALUE>
- 0 - 25.36652904
- 25.36652905 - 60.23010614
- 60.23010615 - 72.92877099
- 72.928771 - 77.50883873
- 77.50883874 - 80.67965486
- 80.67965487 - 83.85047099
- 83.850471 - 89.83979034
- High Potential1
- Medium Potential1

MarinePaleoShoreline

VALUE
- 0 - 28
- 28.00000001 - 38
- 38.00000001 - 48
- 48.00000001 - 810
- Alluvial Sediments

0 0.02 0.04 0.08 0.12 0.16
Kilometers

New Nouveau Brunswick

Time: 2:46:53 PM
Date: 11/24/2021


hive
ENGINEERING
www.hiveeng.ca